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A STUDY OF THE EFFECTS OF CONGENITAL AND ADVENTITIOUS DEAFNESS ON THE INTELLIGENCE, PERSONALITY, AND SOCIAL MATURITY OF SCHOOL CHILDREN

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Educators who work with the deaf have claimed that there are differences between congenitally and adventitiously deaf children. However, scientific data relative to these differences are meagre.

This study was undertaken primarily to determine whether significant measurable differences in intelligence, social maturity, and personality exist between children who are congenitally deaf and those who are adventitiously deaf. The type of deafness cannot be determined with absolute certainty in all cases. A child who became deaf prior to six months of age because of illness, or other causes, might be considered congenitally deaf. It was necessary, therefore, to set up rigid definitions and to select cases carefully. All doubtful cases were eliminated. Congenital deafness was defined as deafness which existed at birth. Adventitious deafness was defined as deafness acquired after the child had learned to speak.

PROCEDURE

One hundred and eighty-nine pupils, ranging in age from seven to nineteen years, were selected from the population at the New Jersey School for the Deaf. Of the sample, one hundred were

males and eighty-nine were females. Sixty-eight were adventitiously deaf and one hundred twenty-one were congenitally deaf. One hundred and twenty-nine of the cases had resided at the school for more than four years; whereas sixty had been in residence less than four years.

The Grace Arthur Performance Scale was administered to the entire group. Ratings on the Haggerty-Olson-Wickman Behavior Rating Schedules were obtained for one hundred eighty-seven cases. These were classified into eight groups according to length of residence at the school for the deaf. Thirteen cases were selected at random from each of the eight groups, making a total of one hundred four cases upon whom information was secured for the Vineland Social Maturity Scale.

RESULTS: INTELLIGENCE

Congenitally Deaf Compared with Adventitiously Deaf.—The mean IQ's on the Grace Arthur Performance Scale for these two groups are presented in Table I.

The mean for the congenitally deaf is 102.5 with the SD 20.2 points. The mean for the adventitiously deaf is 101.3 with the SD 22.5. It will be seen from Table I that the difference between the means is 1.19 in favor of the congenitally deaf. The standard error of this difference is 3.19 and the critical ratio is .37. Both groups are thus found to be of average intelligence with the difference between the groups small and not statistically reliable. The congenitally deaf children are slightly less variable than the adventitiously deaf children. These results are not in agreement with those obtained by Day, Fusfeld, and Pintner,[2] Peterson and Williams,[6] and Reamer.[8] They are in agreement with the results of Drever and Collins,[4] Schick,[9] and Streng and Kirk.[11] Thus we find that these results agree with those of experimenters who used performance tests and the Chicago Non-verbal Examination, but they do not agree with the experiments which used the Pintner Non-language Tests. It does not seem possible to explain this discrepancy on the basis of the difference in tests—one a performance test (concrete materials), and one a non-language pencil-and-paper test; for such an explanation would not account for the fact that when the Chicago Non-verbal Examination was used, the deaf were not found to be mentally retarded. An experiment using the Pintner Non-language Tests together

with the Chicago Non-verbal Examination, and perhaps another similar test might reveal important data which would serve to clarify the existing discrepancy.

TABLE I.—COMPARISON OF MEAN INTELLIGENCE QUOTIENTS ON THE GRACE ARTHUR PERFORMANCE SCALE FOR CONGENITALLY AND ADVENTITIOUSLY DEAF CHILDREN

Group	N	Mean IQ	SD	Mean diff	SD diff	Critical Ratio
Congenital	121	102.5	20.2			
				1.19	3.19	.37
Adventitious	68	101.3	22.5			

A comparison of the mental ages for the congenitally and adventitiously deaf children is presented in Table II.

The mean mental age for the congenitally deaf children is 13.6 with a SD of 3.8; and that for the adventitiously deaf, 14.2 with a SD of 3.8. The difference between the means is .6 in favor of the adventitiously deaf with a standard error of the difference of .57, and a critical ratio of 1.0 which is not a statistically significant difference. Since no difference existed between the groups on chronological age, this comparison is not presented.

The distribution of intelligence quotients for the congenitally deaf shows a range from 40 to 170; for the adventitiously deaf the range is from 40 to 150.

TABLE II.—COMPARISON OF MEAN MENTAL AGES ON THE GRACE ARTHUR PERFORMANCE SCALE FOR CONGENITALLY AND ADVENTITIOUSLY DEAF CHILDREN

Group	N	Mean MA	SD	Mean diff	SD diff	Critical Ratio
Congenital	121	13.6	3.8			
				.6	.57	1.0
Adventitious	68	14.2	3.8			

The range in mental age for the congenitally deaf is from 6 to 23; for the adventitiously deaf, from 5 to 23.

Sex Differences.—The results presented in Table III concerning sex differences agree with the results of Drever and Collins,[4] and Streng and Kirk.[11] The mean IQ on the Grace Arthur Performance Scale for the males is 105.1 with a SD of 20.7. The

mean IQ for the females is 98.7 with a SD of 21.0. The difference between the means is 6.36 points in favor of the males. The standard error is 3.04 and the critical ratio is 2.09. The difference, therefore, cannot be considered statistically reliable. However, it is interesting to note that several other experimenters[2,4,8] have also found deaf boys slightly superior to deaf girls on both performance and non-verbal tests.

TABLE III.—COMPARISON OF MEAN INTELLIGENCE QUOTIENTS FOR DEAF MALES AND FEMALES

Group	N	Mean IQ	SD	Mean diff	SD diff	Critical Ratio
Males	100	105.1	20.7			
				6.36	3.04	2.09
Females	89	98.7	21.0			

A comparison of the mean mental ages is presented in Table IV. The mean mental age for the males is 14.2 and for the females 13.3. The SD is 3.8 for both groups. The difference between the means is .92 in favor of the males, the standard error of the difference is .55, and the critical ratio is 1.6. Again the difference is not significant.

TABLE IV.—COMPARISON OF MEAN MENTAL AGES FOR DEAF MALES AND FEMALES

Group	N	Mean MA	SD	Mean diff	SD diff	Critical Ratio
Males	100	14.2	3.8			
				.92	.55	1.6
Females	89	13.3	3.8			

The IQ range for the males is from 40 to 170, and for the females from 40 to 150. The males range in mental age from six to twenty-three and the females from five to twenty-one.

Comparison of Groups of Deaf Children Who Have Been in Residence More Than Four Years and Less Than Four Years.—Several experimenters have been interested in gathering data relative to the effects of an institutional environment as compared to a home environment—Upshall[12] and Streng and Kirk.[11] Conclusions made in the past have been based on comparisons between populations in residential schools and populations in day-schools.

This experiment was outlined in such a way that a comparison could be made between a group of deaf children who had resided at a residential school for less than four years and a group who had been in residence more than four years.

This comparison assumes that children who have been 'institutionalized' for four years or less would show little effects of institutionalization; whereas the children in the 'more than four years' group, who have been in residence from four to twelve years, would show cumulative effects of institutionalization. Thus, this study compares children from a single school relative to the effects of institutional environment, rather than populations from different schools.

Of the one hundred eighty-nine cases studied, one hundred twenty-nine had been in residence more than four years, and sixty had been in residence less than four years. A comparison of the mean intelligence quotients of these groups is presented in Table V.

TABLE V.—COMPARISON OF IQ ON THE GRACE ARTHUR PERFORMANCE SCALE FOR GROUPS IN RESIDENCE MORE THAN FOUR AND LESS THAN FOUR YEARS

Group	N	Mean IQ	SD	Mean diff	SD diff	Critical Ratio
More than four years	129	99.2	22.2			
				1.54	3.00	.51
Less than four years.	60	97.6	17.7			

The mean for the group in residence more than four years is 99.2 with a SD of 22.2. The group in residence less than four years has a mean of 97.6 with a SD of 17.7. Since the difference between the means is 1.54 in favor of the 'more than four years' group, the standard error 3.0, and the critical ratio .51, the difference between the two groups is not statistically reliable. The group in residence for the longer period is somewhat more variable than the group in residence less than four years, but the greater variability of this group is probably due to the presence in it of more overage children. On the basis of these results we may conclude that length of institutionalization had no measurable effect on the growth of intelligence.

No table is presented for a comparison of mental ages for these groups because such a comparison would be confounded with

chronological age, the group in residence more than four years necessarily being older than the group in residence less than four years. The mean mental age for the 'more than four' group is 14.8 with a SD of 3.6. The mean mental age for the 'less than four' group is 11.5 with a SD of 3.3. The range of intelligence is greater for the children who have been in residence more than four years, but this may be an artifact of the larger number of cases in this group.

RESULTS: SOCIAL MATURITY

Congenitally Deaf Compared with Adventitiously Deaf.—In a validation study of the Vineland Social Maturity Scale at the New Jersey School for the Deaf, Bradway[1] used ninety-two subjects ranging in age from five to twenty-one years. She obtained a mean SQ of 80.7 for the group, with a SD of 11.3, and concluded therefrom that the deaf are retarded approximately twenty SQ points in social competence.

Our findings are in close agreement with the results obtained by Bradway.[1] A comparison of mean results obtained from the adventitiously and congenitally deaf groups is presented in Table VI.

The mean SQ for the adventitiously deaf is 82.4 with a SD of 12.1. The mean SQ for the congenitally deaf is 85.0 with a SD of 17.5. The mean difference between the two groups is 2.60; the standard error is 2.90, and the critical ratio, .89.

TABLE VI.—A COMPARISON OF MEAN SOCIAL QUOTIENTS FOR CONGENITALLY AND ADVENTITIOUSLY DEAF CHILDREN

Group	N	Mean SQ	SD	Mean diff	SD diff	Critical Ratio
Congenital.....	54	85.0	17.5			
				2.60	2.90	.89
Adventitious.....	50	82.4	12.1			

There is not a statistically reliable difference between congenitally deaf children and children who have acquired deafness. There is, however, a retardation in social maturity for both groups ranging from fifteen to eighteen points. Streng and Kirk[11] found no retardation for fifty-one deaf subjects in attendance at a day-school. Since their cases were comparable to ours with respect to mean hearing loss (seventy-one decibels)

and to average intelligence test score on the same test, it would seem that the difference in social maturity between deaf children attending a day-school and deaf children attending a residential school cannot be accounted for on the basis either of intelligence or of differences in degree of hearing loss. The discrepancy in results suggests that day-schools either train deaf children more successfully to be socially mature or select children who are more socially mature.

The congenitally deaf are somewhat more variable than the adventitiously deaf in social maturity, the adventitiously deaf being very similar in variability to the hearing group used by Doll[3] in standardizing the Vineland Social Maturity Scale. This difference in variability suggests that in infancy the congenitally deaf are very inferior in social maturity. However, in later years many of them succeed in becoming quite socially mature, thus making the group scatter between very low social competence scores and scores which are above average.

A comparison of the social ages for both groups is presented in Table VII.

TABLE VII.—A COMPARISON OF MEAN SOCIAL AGES FOR CONGENITALLY AND ADVENTITIOUSLY DEAF CHILDREN

Group	N	Mean SA	SD	Mean diff	SD diff	Critical Ratio
Congenital.....	54	11.37	2.2			
				.57	.47	1.20
Adventitious.....	50	11.94	2.5			

The mean social age for the adventitiously deaf is 11.94 with a SD of 2.5, and the mean social age for the congenitally deaf is 11.37 with a SD of 2.2. The mean difference is .57, the standard error .47, and the critical ratio 1.20. The two groups are very similar in mean social age and in variability.

Scores for cases of acquired deafness range from an SQ of 50 to one of 110, and scores for the congenitally deaf range from 40 to 110. The adventitiously deaf range in social age from seven to nineteen years, and the congenitally deaf range from eight to nineteen years.

Sex Differences.—In his validation study on the Vineland Social Maturity Scale, Doll[3] found no evidence of a sex difference.

Bradway[1] also found this was true with her ninety-two deaf subjects.

A comparison of the mean social quotients for fifty-three males and fifty-one females studied in this experiment is presented in Table VIII.

TABLE VIII.—A COMPARISON OF MEAN SOCIAL QUOTIENTS FOR MALES AND FEMALES

Group	N	Mean SQ	SD	Mean diff	SD diff	Critical Ratio
Males	53	86.3	13.3			
				4.66	2.56	1.8
Females	51	81.6	12.9			

These results are in agreement with those of Doll[3] and Bradway.[1] The mean social quotient for the males is 86.3 with a SD of 13.3. That for the females is 81.6 with a SD of 12.9. The mean difference is 4.66, the standard error 2.56, and the critical ratio 1.8. There is no significant difference between the sexes, but the males are somewhat more variable in social competence than the females. Both groups are more variable than Doll's original distribution, in which he obtained a SD of 12.

Table IX presents the mean social ages for the fifty-three males and fifty-one females.

TABLE IX.—A COMPARISON OF MEAN SOCIAL AGES FOR MALES AND FEMALES

Group	N	Mean SA	SD	Mean diff	SD diff	Critical Ratio
Males	53	11.67	2.1			
				.06	.46	.13
Females	51	11.61	2.6			

The mean social age for the males is 11.67 with a SD of 2.1, and the mean social age for the females is 11.61 with a SD of 2.6. The mean difference is .06, the standard error .46 and the critical ratio .13. There is no significant difference between the males and females in social age.

Comparison of Groups of Deaf Children Who Have Been in Residence More Than Four Years and Less Than Four Years.—This comparison, between deaf children who have been in residence more than four years and those who have been in residence

less than four years, is made in order to determine whether the group which has the longer period of residence shows any greater social maturity. If residential schools for the deaf are adequately training the children in social competence, the children who have been in residence for the longer period should show less retardation in social maturity.

The results of this comparison are presented in Table X.

TABLE X.—COMPARISON OF MEAN SQ FOR DEAF GROUPS IN RESIDENCE MORE THAN FOUR AND LESS THAN FOUR YEARS

Group	N	Mean SQ	SD	Mean diff	SD diff	Critical Ratio
More than four years	53	81.2	12.6			
				5.74	2.5	2.29
Less than four years.	51	86.9	13.4			

The mean social quotient for the 'more than four' group is 81.2 with a SD of 12.6. The mean social quotient for the 'less than four' group is 86.9 with a SD of 13.4. The 'less than four' group is somewhat more variable. The mean difference is 5.74, the standard error 2.50, and the critical ratio 2.29. There is no significant difference between these two groups. These data tend to support the view that deafness itself, rather than length of institutional environment, is the cause of retardation in social competence. On the basis of these results it seems that residential schools for the deaf are neither training nor retarding children with respect to social maturity. An analysis of the items failed on the Vineland Social Maturity Scale indicates a need for greater emphasis in such phases of social activity as buying of merchandise, use of table utensils, and care of dress.

Comparison of social ages for these two groups was not made because such a comparison would be confounded with the factor of chronological age. The 'less than four' group is, of necessity, made up of children considerably younger than those in the comparative group.

RESULTS: PERSONALITY

Congenitally Deaf Compared with Adventitiously Deaf.—The Haggerty-Olson-Wickman Behavior Rating Schedule was selected as a measure of personality because it could be applied to all age levels. Because of the language handicap of the deaf, none of

the available personality inventories were applicable. Language tests of personality at best could be applied only to a select group, and could not be applied, under any circumstances, below what is usually referred to as fifth grade.

One hundred and eighty-seven of the original one hundred eighty-nine cases were rated, two cases having left school. One rating was made by an academic teacher, one by a vocational teacher, and one by a housemother. The Haggerty-Olson-Wickman Behavior Rating Schedule consists of two parts: Schedule A, a Behavior Problem Record, and Schedule B, a Behavior Rating Scale. Schedule A rates the child on symptoms which may be objectively observed, such as temper outbursts, over-activity, and sex offenses. Schedule B rates the child on the more subjective aspects of his personality, such as easily fatigued, courageous, talkative, etc. The child's behavior is rated on a scale from one to five, and the items are weighted according to seriousness of the trait (Olson[5]). A high score indicates maladjustment or high-problem tendency; a low score, better adjustment and less-problem tendency. The two schedules are scored separately.

Olson,[5] when standardizing the scale on hearing children, found a sex difference on Schedule B, the Behavior Rating Scale; the mean for the boys being 73 and the mean for the girls 66. For his entire group he found a mean of 70 with a SD of 17.9.

Schedule B: Behavior Rating Scale.—The results for Schedule B for the congenitally and adventitiously deaf are found in Table XI. The mean score for the congenitally deaf is 77.1 with a SD

TABLE XI.—COMPARISON OF MEAN SCORES FOR CONGENITALLY AND ADVENTITIOUSLY DEAF ON THE HAGGERTY-OLSON-WICKMAN BEHAVIOR RATING SCALE—SCHEDULE B

Group	N	Mean	SD	Mean diff	SD diff	Critical Ratio
Congenital.....	120	77.1	14.6			
				2.0	2.64	.76
Adventitious.....	67	79.1	18.7			

of 14.6. The mean score for the adventitiously deaf is 79.1 with a SD of 18.7. The mean difference is 2.0, the SD of the difference 2.64, and the critical ratio .76. The difference between the two groups is not statistically reliable, but both the congenitally

and adventitiously deaf are somewhat above the norm for Olson's[5] group.

The adventitiously deaf are more variable and the congenitally deaf slightly less variable than the original group. These results indicate that the type of deafness is less important from the standpoint of adjustment than the fact of deafness itself. Both groups are somewhat more unstable than the hearing.

Even though no statistical differences exist between the two groups, we cannot conclude from these data that the two groups should be rehabilitated by the same educational procedures, because one is a 'language' group and the other a 'non-language' group. This difference is important from the standpoint of readjustment.

The scores for both groups range from 55 to 125. Olson[5] obtained a range of from 35 to 139 for his hearing subjects. There is less spread for the deaf subjects, especially in the direction of 'very good' adjustment. This suggests that the deaf do not reach the 'perfection' in adjustment that some hearing subjects attain; neither are their scores as high in the direction expressive of maladjustment.

Sex Differences.—A comparison of the results for the deaf males and females is presented in Table XII. The mean score for the males is 80.9 with a SD of 16.4, and for the females 74.4 with a SD of 15.4. Olson's[5] mean for the boys is 73.5 with a SD of 18.4, and his mean for the girls is 66 with a SD of 15.8. Both deaf males and females are slightly above the norm for hearing children.

TABLE XII.—COMPARISON OF MEAN SCORES FOR DEAF MALES AND FEMALES ON THE HAGGERTY-OLSON-WICKMAN BEHAVIOR RATING SCALE—SCHEDULE B

Group	N	Mean	SD	Mean diff	SD diff	Critical Ratio
Males	100	80.9	16.4			
				6.5	2.33	2.8
Females	87	74.4	15.4			

Olson[5] found a statistically reliable difference between the sexes for hearing children. In our group also there is a similar difference in the same direction, although it does not meet the criterion for statistical reliability. As shown in Table XII, the

mean difference between the deaf males and females was 6.5, the higher scores being made by the males with a standard error of the difference of 2.33, and a critical ratio of 2.8.

Springer[10] found a mean of 75.8 for the deaf boys and 71.6 for the deaf girls. This is a mean difference of 4.2 as compared to a mean difference of 6.4 in this investigation. Although our results are in close agreement with those of Springer, the means for both boys and girls were found to be slightly higher.

Comparison of Groups of Deaf Children Who Have Been in Residence More Than Four Years and Less Than Four Years.—This comparison was made to determine the effect of institutionalization on personality as measured by the Haggerty-Olson-Wickman Behavior Rating Scale. The results are presented in Table XIII.

TABLE XIII.—COMPARISON OF MEAN SCORES ON THE HAGGERTY-OLSON-WICKMAN BEHAVIOR RATING SCALE—SCHEDULE B—FOR GROUPS IN RESIDENCE MORE THAN FOUR AND LESS THAN FOUR YEARS

Group	N	Mean	SD	Mean diff	SD diff	Critical Ratio
More than four years	128	78.5	16.7			
				2.0	1.63	1.2
Less than four years.	59	76.5	16.0			

The mean for the 'more than four' group is 78.5 with a SD of 16.7, and for the 'less than four' group the mean is 76.5 with a SD of 16.0. The mean difference is 2.0, the standard error of the difference 1.63, and the critical ratio 1.2. In view of the low critical ratio, there is no real difference between these groups. Both groups are above Olson's[5] mean of 70 for the original study and both groups are less variable as compared with the original SD of 17.9 reported by Olson.

The results obtained from the groups in residence more than four and less than four years indicate that length of residence is not a contributing cause to the instability of the deaf. The results also indicate that existing educational rehabilitation procedures in residential schools are somewhat ineffective. Deaf children are somewhat more maladjusted than the hearing when they enter the residential school and they are equally maladjusted after having been in residence from four to twelve years.

Comparison of Means from Ratings by Household, Academic, and Vocational Departments on Schedule B—Behavior Rating Scale.—To determine the differences among the ratings obtained from the household, academic, and vocational departments, means for ratings from each department were computed. These means are presented in Table XIV.

The means for the ratings from the three departments are in close agreement despite the fact that differences might be expected because of the nature of the information asked. For

TABLE XIV.—MEAN SCORES FOR SCHEDULE B, BEHAVIOR RATING SCALE

	Ratings by House-mothers		Ratings by Vocational Teachers		Ratings by Academic Teachers	
Group	Mean	SD	Mean	SD	Mean	SD
Adventitious	82.0	24.0	75.6	20.0	79.6	20.9
Congenital	78.1	20.3	74.8	16.0	78.7	17.5
Males	84.1	23.4	75.8	19.3	81.5	18.8
Females	74.5	18.6	74.6	14.4	76.3	18.4
More than four years	79.9	22.0	74.9	18.2	78.5	18.4
Less than four years	78.6	21.2	73.0	15.6	80.2	19.4

example, opportunity to observe stealing, sex offenses, etc., is greatest in the household.

Analysis of the results reveals that the means for the household are only slightly above those for the vocational and academic departments. The means for the vocational department are the lowest. Whether this is a difference between the raters or whether the deaf child exhibits fewer behavior problem symptoms while employed at vocational activities cannot be determined from the data available. Ratings made by the household, academic teachers, and vocational teachers are not significantly different.

Schedule A—Behavior Problem Record.—Schedule A consists of a list of fifteen behavior-problem symptoms which may be

objectively observed. High scores indicate that the child has several problems of a serious nature. Low scores indicate few and less serious problems.

Because of the very wide differences between the males and females as measured by Schedule A and because of the extreme variability of the groups, the medians were used as a basis of interpretation. However, the mean scores are presented to illustrate the variability.

A comparison of the mean scores on Schedule A for the congenitally and adventitiously deaf is presented in Table XV, the 'more than four' and 'less than four' in Table XVI, and the males and females in Table XVII. As will be noted in Table XVII, the mean score for the boys is 47.5 with a SD of 24.6 and the mean

TABLE XV.—A COMPARISON OF MEAN SCORES FOR CONGENITALLY AND ADVENTITIOUSLY DEAF ON THE HAGGERTY-OLSON-WICKMAN, SCHEDULE A

Group	N	Mean Score	SD	Mean diff	SD diff	Critical Ratio
Congenital	120	30.3	23.3			
				9.3	4.10	2.27
Adventitious	67	39.6	28.8			

TABLE XVI.—A COMPARISON OF MEAN SCORES FOR GROUPS IN RESIDENCE MORE THAN FOUR AND LESS THAN FOUR YEARS ON THE HAGGERTY-OLSON-WICKMAN, SCHEDULE A

Group	N	Mean Score	SD	Mean diff	SD diff	Critical Ratio
More than four years	128	35.5	25.4			
				6.14	4.12	1.49
Less than four years.	59	29.4	26.6			

TABLE XVII.—A COMPARISON OF MEAN SCORES FOR DEAF MALES AND FEMALES ON THE HAGGERTY-OLSON-WICKMAN, SCHEDULE A

Group	N	Mean Score	SD	Mean diff	SD diff	Critical Ratio
Males	100	47.5	24.6			
				29.75	3.01	9.88
Females	87	17.7	16.2			

score for the girls is 17.7 with a SD of 16.2. A very wide difference exists between the sexes and both sexes show a great deal of variability.

Springer,[10] who used the mean scores on Schedule A as a basis of interpretation, also found a wide variation in the distributions. He reported a mean score of 30.15 with a SD of 27.21 for the boys and a mean score of 19.8 with a SD of 19.33 for the gir s. These scores indicate even greater variability than that found in the present investigation.

The mean score for boys as reported by Springer[10] is somewhat lower than that found for the boys in the present study, which suggests that the deaf boys studied by Springer had fewer problem tendencies than the boys studied by the writers. This discrepancy can perhaps be explained by differences in homogeneity of the population studied. The deaf boys studied by Springer were in attendance at three types of schools; public, day, and residential, whereas the results of the present experiment were obtained from subjects all of whom were in attendance at a residential school.

When the median scores on the Behavior Problem Record are compared in Table XVIII, we find a marked difference between the groups. Although a median score is not given by Olson for his entire group, all the deaf are considerably above his medians of 12 for the boys and 5 for the girls.

TABLE XVIII.—A COMPARISON OF THE MEDIAN SCORES FOR ALL GROUPS ON SCHEDULE A—THE BEHAVIOR PROBLEM RECORD

Group	N	Median
Congenital	120	23
Adventitious	67	35
Males	100	46
Females	87	12
More than four years	128	32
Less than four years	59	19

The median for the congenitally deaf is 23 and for the adventitiously deaf 35, a difference of twelve points. The median for males is approximately four times greater than the median of 12 for Olson's group. The median for the girls is approximately twice as large as that reported by Olson.

The median for the group which has been in residence more than four years is thirty-two and for the group in residence less than four years nineteen. This increase in the presence of behavior problems cannot be interpreted as the result of length of residence at the institution, because on the standardization group of elementary-school children, a similar increase in the presence of behavior problems was noted with greater chronological age, especially in the seventh and eighth grades. Olson[5] suggests that this may be caused by the accumulation of over-age children in these grades, and this also may be true of the deaf population in the present study.

The results obtained by using Schedule A, the Behavior Problem Record, indicate that deaf subjects have many more behavior problems than hearing subjects, irrespective of type of deafness, length of residence, or of sex.

The data from Schedule A also suggest that many more behavior problems exist among deaf males than among deaf females. On the basis of these results, the methods of rehabilitation and adjustment used by the residential school apparently are more effective with females than with males. Studies should be made and data collected to determine to what extent this is true and to what extent both sexes can be better adjusted.

TABLE XIX.—COMPARISON OF MEAN INTELLIGENCE QUOTIENTS FOR THE EIGHT GROUPS

	Males, Years in School				Females, Years in School			
	Less than 4		More than 4		Less than 4		More than 4	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Congenital....	104.7	14.5	106.7	26.8	94.5	34.0	100.6	15.8
Adventitious..	101.0	13.3	104.3	31.2	92.3	23.4	108.8	24.6

Comparison of Results Obtained from Individual Groups with the Results from the Entire Group Studied.—It was explained in the section on procedure that thirteen cases were selected from each of the eight possible groupings, making a total of one hundred

four cases for which scores were obtained on intelligence, social maturity, and personality.

In Table XIX are presented data on intelligence quotients for each of these eight groups. Similarly the mean social maturity scores are presented in Table XX. The means for the various groups on intelligence and social maturity are in close agreement with the means for the original one hundred eighty-nine cases tested for intelligence and with the means for the one hundred four cases on social maturity.

TABLE XX.—COMPARISON OF THE MEAN SOCIAL QUOTIENTS FOR THE EIGHT GROUPS

	Males, Years in School				Females, Years in School			
	Less than 4		More than 4		Less than 4		More than 4	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Congenital . . .	92.9	11.9	82.5	7.7	87.0	16.7	76.5	8.4
Adventitious . .	85.3	12.4	82.3	16.3	79.7	12.2	80.0	10.1

From Table XVIII we note that the median score on Schedule A for the congenitally deaf is 23 and for the adventitiously deaf, 35. Further analysis of the results for Schedule A, as presented in Table XXI, indicates that the congenitally deaf males who have been in residence more than four years present equally as many behavior problems as the adventitiously deaf males who have been in residence more than four years; the median in both cases being 59. These data are in agreement with Olson's[5] finding that behavior problems tend to center around the upper-age levels. This is also true for the females, but the difference is much smaller. Although the medians for both the congenitally and adventitiously deaf females who have been in residence more than four years are above the medians reported by Olson for the hearing children, the difference is again less marked than it is for the males. The females (both congenitally and adventitiously deaf) who have been in residence less than four years, fall close to the median of 5 for the hearing.

TABLE XXI.—COMPARISON OF MEDIAN SCORES ON SCHEDULE A FOR THE EIGHT GROUPS

	Males, Years in School		Females, Years in School	
	Less than 4	More than 4	Less than 4	More than 4
	MD	MD	MD	MD
Congenital	23	59	5	14
Adventitious	43	59	9	15

The median score for Schedule B, the Behavior Rating Scale, as found by Olson[5] was 69 for the boys and 63 for the girls. The medians for the eight groups are presented in Table XXII. The medians for the congenitally and adventitiously deaf are very similar. This is in agreement with our finding for the original one hundred eighty-nine cases; there being no difference between the adventitiously and congenitally deaf children on problem tendency, as measured by Schedule B of the Haggerty-Olson-Wickman Rating Scale. The medians for both deaf males and females are slightly above the median for hearing children.

TABLE XXII.—COMPARISON OF MEDIAN SCORES ON SCHEDULE B FOR THE EIGHT GROUPS

	Males, Years in School		Females, Years in School	
	Less than 4	More than 4	Less than 4	More than 4
	MD	MD	MD	MD
Congenital	72	84	68	73
Adventitious	85	84	67	66

Correlation among Factors.—Scatter diagrams were used to study the relationship among the factors of personality, intelligence, and social maturity. The scatter diagrams indicate extremely slight or no relationship among these factors. The scores show no consistent trend, which suggests that behavior problems such as lying, truancy, and sex offenses are exhibited by both bright and dull deaf children, and by both socially competent and socially incompetent deaf children. These data seem to imply that the high incidence of behavior problems, as measured by Schedule A, is caused by factors other than intelligence and social inferiority. Further study, especially on educational achievement and its relation to behavior problems, is indicated.

The scatter diagram for Schedule B and social age indicates that only a slight relationship exists between these factors. To obtain further evidence relative to the relationship between the subjective aspects of personality as measured by Schedule B and social maturity, a correlation was computed for these factors. A small negative correlation was found (see Table XXIII) which indicates that the better adjusted deaf child is more socially mature than the child having high problem-tendency scores.

TABLE XXIII.—CORRELATION AMONG FACTORS

IQ's and SQ's	r	.38	±.04
Schedule B and SQ's	r	−.15	±.04
Schedule A and B	r	.71	±.02

In view of this fact, residential schools for the deaf could perhaps attack the instability as shown by Schedule B, and the social immaturity as shown by the Vineland Social Maturity Scale, as a common problem.

Because more problem type behavior was thought to be exhibited in the household, and because the housemothers furnished the information for the Vineland Social Maturity Scale, scatter diagrams were made for household ratings on Schedules A and B and social quotients. A somewhat consistent trend was noted between Schedule B (as rated by the housemothers) and social quotients, which is in agreement with our finding of a small negative correlation between these factors when all the ratings were used. No relationship was indicated between the factors of objectively observed behavior problems (as rated by house-

mothers on Schedule A) and social quotients. This also is in agreement with our finding of no relationship when all the ratings were used.

The finding of no greater relationship between the ratings by housemothers and social maturity than existed between these factors when all the ratings were used is perhaps important from the viewpoint of institutional residence. The data suggest that problem tendency, as noted in the cottages, is only slightly related to social maturity. The implication is that methods of instruction and degree of educational achievement are perhaps more directly related to the factor of social competence.

Streng and Kirk[11] reported a correlation of .29 ± .06 between intelligence and social maturity. The correlation between these factors as determined by the present experiment was .38 ± .04 (Table XXIII). Neither the correlation reported by Streng and Kirk nor our correlation is in agreement with the correlation of .81 obtained by Doll[3] between IQ and SQ. This discrepancy can perhaps be explained by a difference in the type of intelligence test used. Doll used a language test (Binet) whereas non-language tests were used both in this study and in that by Streng and Kirk.

A correlation of .71 ± .02 was obtained between Schedule A and B. This correlation is no doubt spuriously high because of the wide discrepancy between the scores for males and females on Schedule A. However, the high correlation is indicative of consistency between the schedules on the traits measured.

SUMMARY AND CONCLUSIONS

The Grace Arthur Performance Scale of Intelligence was administered to one hundred eighty-nine subjects and the results obtained for the congenitally deaf were compared with those for the adventitiously deaf. Both groups were found to be of average intelligence, and the difference between the groups was not statistically significant.

Deaf boys tended to rate slightly higher in intelligence than deaf girls. However, the difference was not statistically reliable.

There was not a statistically significant difference between the groups who had been in residence more than four years and less than four years. This fact seems to indicate that institutionalization had little or no effect on growth of intelligence.

Information was secured for the Vineland Social Maturity Scale on one hundred four deaf subjects. The results indicated a retardation in social maturity of from fifteen to twenty points.

Subjects having acquired deafness were compared with congenitally deaf subjects. No significant difference in social maturity was found between these groups.

There was no evidence of a difference in social competence between deaf males and females.

Children who had been in residence at a school for the deaf less than four years were compared with children who had been in residence more than four years. This comparison made it possible to secure information regarding effects of institutionalization. Although the children who had been in residence longer had a lower mean SQ, the difference between the two groups was not statistically significant. These data support the view that residential schools are not adequately training children in social competence. Instruction emphasizing social training is indicated.

Ratings on the Haggerty-Olson-Wickman Behavior Rating Schedules were obtained for one hundred eighty-seven deaf subjects. One rating was made by a vocational teacher, one by an academic teacher, and one by a housemother.

The deaf exhibited more behavior problems and problem tendencies than the hearing. Children who were congenitally deaf and those who had acquired deafness showed equally inferior adjustments. The type of deafness apparently is less important than the fact of deafness from the viewpoint of educational rehabilitation.

There was a marked difference between males and females in the presence of behavior problems; the males exhibiting much more of the problem-type behavior. There was a smaller difference between the sexes on the more subjective aspects of personality.

Length of residence had no influence on behavior as measured on the Haggerty-Olson-Wickman Behavior Rating Schedules. Deaf children who had been in residence from four to twelve years exhibited behavior equally inferior to children who had been in residence four years or less. These data suggest that the existing methods of training deaf children in residential schools are ineffective from the viewpoint of adjustment.

There was no significant difference in the mean score of the ratings by vocational teachers, academic teachers, and housemothers.

Although some educators have been of the opinion that congenitally deaf children and children who have acquired deafness represent two distinctly different groups, these data suggest that no significant difference exists in intelligence, social maturity, or personality.

In view of the finding that deaf children were retarded approximately twenty points on social competence, and because no significant difference on social maturity existed between children who had been in residence more than four years and those who had been in residence for a shorter period, residential schools should be made aware of the needed social training. Effective methods of social training should be determined experimentally. This might be accomplished by contrasting training methods used in different cottages, as well as in different classes. Certainly residential schools for the deaf can be justly criticized for the lack of growth in social age, especially in view of the finding of no retardation in mental age for the deaf. It should be suggested, however, that a correlation might exist between social age and length of residence if the correlation were done on actual years of residence. Such a correlation could not be computed with the data in this experiment.

The results for personality as measured by the Haggerty-Olson-Wickman Rating Schedules indicated that deaf children possess more problem tendencies and exhibit considerably more behavior problems than do hearing children. This finding points to the need for much more psychological work in residential schools. Obviously, because of the inadequacy of rating scales and of language tests of personality, new techniques must be devised for the measurement of personality of the deaf. Language tests of personality are equally as inadequate as language tests of intelligence. Projection techniques for the study of personality (such as Rorschach and Thematic Apperception) suggest better approaches to this problem. An experimenter thoroughly familiar with the deaf and trained in the projective test technique could administer such tests, the subjects responding by using the means of communication best suited to their individual cases, thus eliminating the language handicap.

Very few clinical personality studies have been made of deaf children. Information is meagre regarding the real wishes, aspirations, and inhibitions of the deaf child and what he thinks about his deafness. From the viewpoint of guidance and rehabilitation such clinical studies would be more valuable than surveys of large populations.

REFERENCES

1) Bradway, K. P. *The Social Competence of Deaf Children.* American Annals of the Deaf, 82, 122–140, March, 1937.

2) Day, H. E., Fusfeld, I. S., and Pinter, R. *A Survey of American Schools for the Deaf.* National Research Council. Washington, D. C., 1928.

3) Doll, E. A. *The Vineland Social Maturity Scale.* Revised Condensed Manual of Directions. The Training School, Vineland, N. J. Series No. 3, 1–20, April, 1936.

4) Drever, J., and Collins, M. *Performance Tests of Intelligence.* Oliver and Boyd, London, 1936.

5) Olson, W. C. *Problem Tendencies in Children.* The University of Minnesota Press, Minneapolis, 1930.

6) Peterson, E. G., and Williams, J. W. *Intelligence of Deaf Children as Measured by Drawings.* American Annals of the Deaf 75, 273–290, Sept., 1930.

7) Pintner, R., and Paterson, D. G. *Learning Tests with Deaf Children.* Psychological Review Monographs. Volume 20, No. 4.

8) Reamer, J. C. *Mental and Educational Measurements of the Deaf.* Psychological Monographs, No. 132. Princeton, N. J. 1921.

9) Schick, H. F. "A Performance Test for Deaf Children of School Age," *Volta Review,* 36, 657–658, 1934.

10) Springer, N. Norton. *A Comparative Study of the Behavior Traits of Deaf and Hearing Children of New York City.* American Annals of the Deaf, 83, 255–273, May 1938.

11) Streng, Alice, and Kirk, Samuel A. *The Social Competence of Deaf and Hard-of-Hearing Children in a Public Day-School.* American Annals of the Deaf, 83, 244–254, May 1938.

12) Upshall, C. C. *Day-Schools vs Institutions for the Deaf.* Contributions to Education No. 389. Bureau of Publications, Teachers College, Columbia University, New York, 1929.

SOCIAL STIMULUS VALUES

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In this day of attitude and personality scales and rating cards, one often wonders to what extent they are the written expression or evidence of what many people often do subjectively or orally from day to day in the ordinary walks of life. All of us perhaps differ in the degree in which we practice this, but it is pretty evident that most of us indulge. One of the common habits of modern civilization is that of classifying or grouping, a practice which has its dangers as well as its advantages.

In every community or group there are always some individuals whose names are closely associated with certain types; to mention or name the type immediately suggests the individual. Most of us will agree that such classifications or groupings are made, but there is always the question whether the classifications thus made correlate or agree with the classifications made by other individuals. If there is no relation between the classifications or groupings made by the different individuals, there cannot be very much evidence that these classifications or groupings are based upon facts.

For some time the writer has felt that this practice of grouping or classifying of fellow pupils is rather common among high-school students. In a series of weekly guidance lectures to seniors, the following experiment was set up to ascertain to what extent or degree individual pupils classified or typed their fellows and to what extent or degree they likewise were typed or classified. Chart 1 gives the classes or types that were set up by the writer with explanations or descriptions covering them.

The list of types presented in Chart 1 was carefully read before each of two groups with the instructions that if the reading of any of these types together with its description suggested any member of the class, the name of the member suggested was to be written under the proper type. The blanks were to be left unsigned and the tabulated results were to be open to the individual's examination alone. In other words, John Jones could learn whether he had been selected as a member of a certain type or not, but he could not find out whether Joe Smith had been typed or not. This was the agreement from the outset of the experiment.

CHART 1.—TYPES OF PERSONS I HAVE MET

Type	*Description of the Type*
1) Alarm Clock	Has established the habit of always being late or the last to enter the room or class.
2) Alibi Ike	Always good at offering excuses, no matter what happens.
3) Andy or Gullible	They can always be made to believe anything; they see opportunities in anything that is presented. Agents usually call this the 'sucker' type.
4) Back Biting	Always talking about others when they are not present.
5) Bluffing	Always ready to recite with hand raised whether they know anything or not. When called upon they always speak whether they know anything or not. They are always discovered by all present. They fool none but themselves.
6) Bragging	Always tell how good their clothes are, how large the family auto is or how much their shoes cost.
7) Caged Squirrel	Always running about in circles in everything they do but never arriving anywhere.
8) Careless or Slouchy	In dress and in habits the name will hold.
9) Clownish Smart	Do smart things and clownish things to attract the attention of others and try to cause them to laugh or entertain them so as to attract attention to themselves.
10) Coöperative or Dependable	Always willing to help others no matter what the cause or task may be. You can always depend upon them to do their part.
11) Coward	Never can stand alone and say 'No' to anything. Can be persuaded to do anything by being told that the crowd is doing it or that it is old-fashioned to refuse.

CHART 1.—*Continued*

Type	*Description of the Type*
12) Day Dreamer	Continually dream and have big ideas of what will come their way some day, but make no attempt to do anything to bring it about.
13) Defying Authority	The type that openly defies authority and often when told to do something will openly refuse.
14) Defeatist	Those who have the feeling that they cannot do the work or task before they begin. This peculiar type will accuse themselves of something that would insult them if others did the accusing.
15) Emotional or Impulsive	Very easily insulted and provoked.
16) Flashy and Loud	In both dress and speech they are so loud that they attract special attention to themselves.
17) Fun-making	Make fun of others who are more poorly dressed or slower in their studies.
18) Goody Goody	These folks want to be much better than others, in fact better than they really are.
19) Good Student	Their lessons are always prepared and their work is finished on time. They ask questions when the work is not understood.
20) Gloomy Gus	Always discouraged and down in the dumps.
21) Grasshopper Type	Just flit or jump about in their thinking and interests. One minute they are thinking about one thing and the next minute about something else.
22) Guinea Type	Always buzzing and cackling but never saying anything worth while. Men may come and men may go but they cackle on forever.
23) Hammer	Always knock everything and anyone who tries to do or accomplish anything.

CHART 1.—*Continued*

Type	*Description of the Type*
24) High Hat or Jack Horner	Always think they are above all others. Look what a big boy or girl I am.
25) Honest Type	Honest in all types of work and play.
26) Iago	Always try to get others into trouble, daring them to do something and then step aside and laugh at them when they are in trouble.
27) Lazy	Want others to do all their work. Their lessons are never prepared and their work is never in on time.
28) Stubborn or Own Way	Always want their own way in everything. Seldom agree with others in anything.
29) Over Polite	Try to put on too much politeness so that it seems to be insincere.
30) Peppy	Put pep and life into the groups or meetings that they attend.
31) Persistent	Keep at the task until it is finished, no matter how difficult or how long.
32) Poor Loser	Always looking for excuses when they lose or fail.
33) Pouting	Always hang their lips when things do not go their way.
34) Procrastinator	Always put off things until some other day or some more convenient time.
35) Pussy Foot	You never know where these folks stand. The last person who interviews them has them on his side until the next one comes along.
36) Sacrificing	Will do everything for their friends or the cause in which they are interested no matter how much time and work it takes.
37) Saddist	Take pleasure in annoying others and causing them to suffer pain or humiliation.
38) Selfish	Want others to do everything for them or they are offended. Always want the best for themselves.

CHART 1.—*Continued*

Type	*Description of the Type*
39) Silly or Giggling	These folks are just silly and everyone knows it when he first meets them.
40) Smart Aleck	They give smart answers and act so as to appear just a little above the average. They think so.
41) Snobbish	They snob all who do not belong to their chosen group or clique.
42) Tantrum	When things do not go their way they scream, jump or throw books or anything they have in hand.
43) Timid or Shy	These folks are so timid and shy that they do not even tell what they know or do what they can.
44) Tough	These want others to believe that they are hard guys who have seen the world and have turned it upside down. They think so.

It is rather interesting to find that many of the members of the class, numbering seventy-five, were anxious to learn whether they had been selected or chosen for a type or not, and if so in which of the types they had been classified. There had been no previous discussion of the types, hence there could be no chance for pupil agreement upon certain individuals for the several classes. The list of different types was prepared by the writer, and the students had no knowledge of the types contained therein until they were read before the groups.

The object of the experiment was "To see oursels as ithers see us." This presented the opportunity to change habits, attitudes or personality if undesirable, and encourage and develop them if desirable. It was felt by most of the group that information of this type should prove valuable to anyone whose desire it was to improve.

Table 1 shows the percentage of the entire group that agreed upon a single individual as suggested by the type. For example fifty-five per cent of the entire group agreed upon a single individual as the example suggested by Type No. 1.

As can readily be seen in a group of seventy-five students, each

individual has one chance in seventy-five to select the proper pupil for the type; pure chance alone gives one chance in seventy-five. The results in thirty of the forty-four types listed, however, shows more than mere chance operating in these classifications. When from seven to sixty-two per cent of a group of such size agree upon a single individual classification or rating, the method employed must possess some reliability. The agreement in these classifications was actually higher than the writer had anticipated. The average agreement in selecting the individual for the type in the highest twenty of the given types was about twenty per cent and the average agreement for the entire group of forty-four types was ten per cent for the first group and twelve per cent for the second group.

To check upon the validity of the experiment this same list of types was presented to another senior class of seventy-two members two years later. In Table I the column headed Attempt II shows the per cent of the second group that agreed upon a single individual as suggested by the type. The evidence of this check experiment two years later shows the same general results. Of course absolute agreement could not be expected, since a different group or class was being classified or typed. The same outstanding agreement for the highest twenty of the given types was twenty-three per cent and for the entire list of forty-four types, twelve per cent. In a number of these classifications there was a higher degree of agreement than there would have been had these same pupils been asked to give such an objective answer as the color of the eyes of these individuals, as was demonstrated by a later experiment.

In both of these experiments there were only eight types for which less than seven per cent of the class selected or chose an individual—Types 14, 17, 20, 23, 29, and 35. Whether these groups had no members who displayed these qualities or whether the types were not definite or clearly defined is not known.

In some of these classifications several individuals were selected, but in these selections there seem to be marked agreements. The reasons for such multiple selections may, perhaps, be due to some overlapping in the types presented, several different types displayed by the same individual, or to differences in the interpretations of the types by those who classified. For example, the pupil who was classified by sixty-two per cent of the

pupils under the Good Student type was also classified by several pupils under the Dependable, the Honest, and the Persistent types. It is not very difficult to imagine that a person who is a good student could likewise be dependable, honest and persistent in his work; it is rather just what should be expected.

TABLE I

Type Number	Per cent of the group selecting same individual		Type Number	Per cent of the group selecting same individual	
	Attempt I	Attempt II		Attempt I	Attempt II
1	55	35	23		
2	23	20	24	25	39
3		11	25	20	26
4	11		26	17	10
5	25	20	27	12	11
6	7		28	7	11
7	8		29		
8	13		30	25	10
9	17	30	31	8	12
10	8	26	32	11	8
11		7	33		14
12	12	7	34	7	
13	11	10	35		
14			36	16	
15		22	37		8
16	12	15	38	16	
17			39	9	28
18		10	40	11	20
19	45	62.5	41	16	8
20			42		33
21		11	43	20	11
22		14	44	12	11

Whether we believe in personality ratings or not, these pupils seen to possess some insight into the personalities of their fellows as is shown in some of these classifications. There does, however,

not seem to be any special or outstanding type, but it appears to be possible to classify the good scholarship, tardy, bluffing, alibi, smartness, honesty, lazy and tantrum types with a high degree of accuracy.

Of course, there are those who will argue or contend that some of these traits are objective and can readily be seen by the observing. After all each individual classifies himself by his outward acts and habits, and these become stimuli, which must be rather constant and definite so as to elicit such uniform reactions from the observers. From these criteria the observant members make their type selections or classifications.

If personality is one's social stimulus value, here is evidence that some of these individuals have stimulated a number of those with whom they have come in contact from day to day in such a manner as to bring about a relatively high agreement in the opinions of their associates.

If the problem had been to select the individual with the best or poorest personality, results would perhaps have been more varied than these selections made upon the basis of social stimuli, since these types are more specific than the general term 'personality' would have been. It seems that when the term is broken up into different stimulus types, high-school pupils are able to classify their classmates with a fair degree of agreement. Perhaps, this is the classification by which the individual will be known and remembered long after; just as nick-names acquired in high school or college often cling throughout life.

For the pupil, the chief value of the experiment, however, seems to lie in the information given the individual from his classmates' responses to his social stimuli—his personality. After all, these classifications have some guidance values which, if followed, will enable the individual to correct his undesirable traits and habits and cultivate the desirable and, thereby, improve his personality.

THE EFFECT OF TUITION UPON THE PROCESS OF LEARNING A COMPLEX MOTOR SKILL*

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INTRODUCTION

The Problem.—The major purpose of this investigation was to study tuition as a condition affecting learning. The investigation was restricted to an analysis of the process of learning the complex motor skill of archery by two groups of women college students under conditions comparable except for the experimental variable of tuition. The members of one group were given regular and systematic instruction in the technique of archery of the type commonly presented by teachers of this sport. The members of the second group practiced archery under the observation of the experimenter, but without instruction. The general purpose was to determine the effects which tuition during practice had on the process of learning the complex motor skill of archery. The investigation was undertaken to discover whether students aided by tuition and other students practicing without this aid learned in a similar manner.

Specific Questions.—Among the questions that were raised at the beginning of this investigation were the following:

1) What is the effect of tuition in archery upon those aspects of learning represented in curves of learning?

2.) How are the factors of intelligence, size, experience in physical education, and personality related to achievement in archery, for the two groups compared?

3.) How are the fluctuations in the learning curves of individuals and groups learning archery related to the presence or absence of tuition?

4) What light upon the process of learning archery in the presence or absence of tuition is shed by the introspective reports of subjects, and by non-quantitative records of behavior kept by the experimenter and other trained observers?

Implications of the Study.—In education there has been much

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interest in the manner in which learning takes place, and in the conditions under which learning is advanced. In the classroom, children actively learn to solve problems. It is the teacher's duty to guide the children in acceptable work methods, and to prevent them from making errors. The teacher also tries to motivate the children to do better work. Tuition is given in order to aid the pupils in learning. It is expected that pupils so assisted will progress more rapidly than those not given instruction. While this matter was given attention in the present study, it was not the main interest of the investigator.

In laboratory studies of the effects of practice on learning a skill, experimenters have almost invariably set up rigid conditions for presentation of the learning problem and for stimulation of the students, and then left the students to their own devices. Teachers of skill do nothing of this sort. Instead, they demonstrate, analyze, and describe the correct process while drilling the students in methods of work which prevent errors.

Investigators have studied the effects of the amount of practice engaged in, the temporal distribution of practice, the loss of achievement without practice, and other similar conditions affecting learning. There have been relatively few investigations which study tuition as a condition of learning, and the effect which this tuition has upon the process of learning. More knowledge on this subject is needed.

Related Studies.—The literature which was reviewed before undertaking this investigation included summaries and handbooks on psychology, recent textbooks on psychology, investigations involving motor learning, and investigations involving tuition and learning. The textbooks in archery were reviewed, as well as those investigations which involved this skill. Lashley's investigation was a pioneer use of archery to study the acquisition of skill.[1] His subjects shot outdoors with no control of wind, weight of arrows, tightness of bow string, or of temperature. All of his subjects practiced without being given instruction. The investigator, who took part in the experiment, read books on archery, and in this way received tuition in the skill.

Hyde's study was a survey of achievement in archery, under-

[1] K. S. Lashley, "The Acquisition of Skill in Archery," *Carnegie Institute Department of Marine Biology Papers.* Vol. VII, pp. 109–10. Washington, D. C.: Carnegie Institute of Washington, 1915.

taken in order to make standardized rating scales.[2] Included in her study was a report of the correlations she found between achievement in archery and the height, weight, and mental ability of the subjects.

Goodenough conducted an experiment with pre-school children to discover the effects of tuition upon teaching this age group.[3] Her main findings dealt with the amount learned under various types of instruction. The effects of tuition upon animal and human maze learning has been studied by Carr and his associates.[4]

THE METHOD OF PROCEDURE

The Subjects.—Two classes in archery were formed, with twenty subjects in each. The members of each class were girls studying at Southern Illinois Normal University in Carbondale, Illinois. All of the subjects had selected archery from among a group of sports that grant credit toward graduation.

Matching of Groups.—No attempt was made to match the individuals in the two groups with each other. The groups were highly similar, however, in terms of certain variables. These were height, weight, mental ability, and previous physical education experience. The two groups were considered at the start of the experiment to be equally able to acquire the skill in archery.

Physical Setting.—The experiment was carried on in a gymnasium where the two archery groups were relatively free from the effects of wind and weather. The subjects had no practice away from the gymnasium, and had no opportunity to see other archers shoot.

Experimental Variable.—The members of the two groups learned archery under radically different conditions. One class, the tuition group, was taught an accepted technique of shooting a bow and arrow; the other class, the non-tuition group, learned

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[2] Edith Hyde, "The Measurement of Achievement in Archery," *Journal of Educational Research*, XXVII (May, 1934), 72–86.

[3] Florence Goodenough and C. R. Brian, "Certain Factors Underlying the Acquisition of Motor Skill by Pre-School Children," *Journal of Experimental Psychology*, XII (April, 1929), 127–55.

[4] Harvey Carr, "Teaching and Learning," *Journal of Genetic Psychology*, XXXVII (June, 1930), 189–219.

without instruction other than the minimum amount necessary for the manipulation of the equipment with safety. Each group met each Tuesday and Thursday for fifty minutes during March, April, and May, 1943. The experimental period included eighteen practice periods during which arrows were shot and scores recorded.

Records.—Records were kept of the proceedings in each class, the instruction given to the tuition group, and the daily scores for each individual and for both groups. Individual and group learning curves were plotted from these scores.

Each individual taking part in the experiment took a personality test. Interviews were held with each student during the time of the experiment. The subjects wrote accounts of their thoughts while they were shooting. The members of each group also wrote answers to certain set questions that were asked during the process of the experiment.

EFFECT OF TUITION UPON THE ASPECTS OF LEARNING REPRESENTED IN CURVES OF LEARNING

Shapes of the Learning Curves.—The shapes of learning curves take various forms, depending on the way in which they are plotted. The most common method of plotting the curves has been to plot scale units along the abscissa to express equal units of practice: the scale units of the ordinate usually express equal units of achievement. Using this method of plotting curves, most of the investigators interested in motor learning have found that the practice curves showed a sharp initial rise in performance, and have been negatively accelerated.

The learning curves plotted from data obtained in this investigation are similar to those found in the experiments involving typewriting, telegraphy, and ball tossing.

The group curve for the tuition class in archery shows a sharp initial rise in performance from the first through the ninth practice periods. The group curve for the non-tuition class also shows a sharp initial rise in performance. This rise in score extends from the first practice period to the eighth day of practice. (Fig. 1.)

Although the rate of gain is different for each group, the same negative acceleration in performance is common to the curves drawn from the data obtained from each group. The data at

hand suggest that learning curves plotted to show the progress of subjects learning a complex motor skill with the aid of an instructor are similar in shape to the curves showing the progress of subjects learning a complex skill by means of practice without

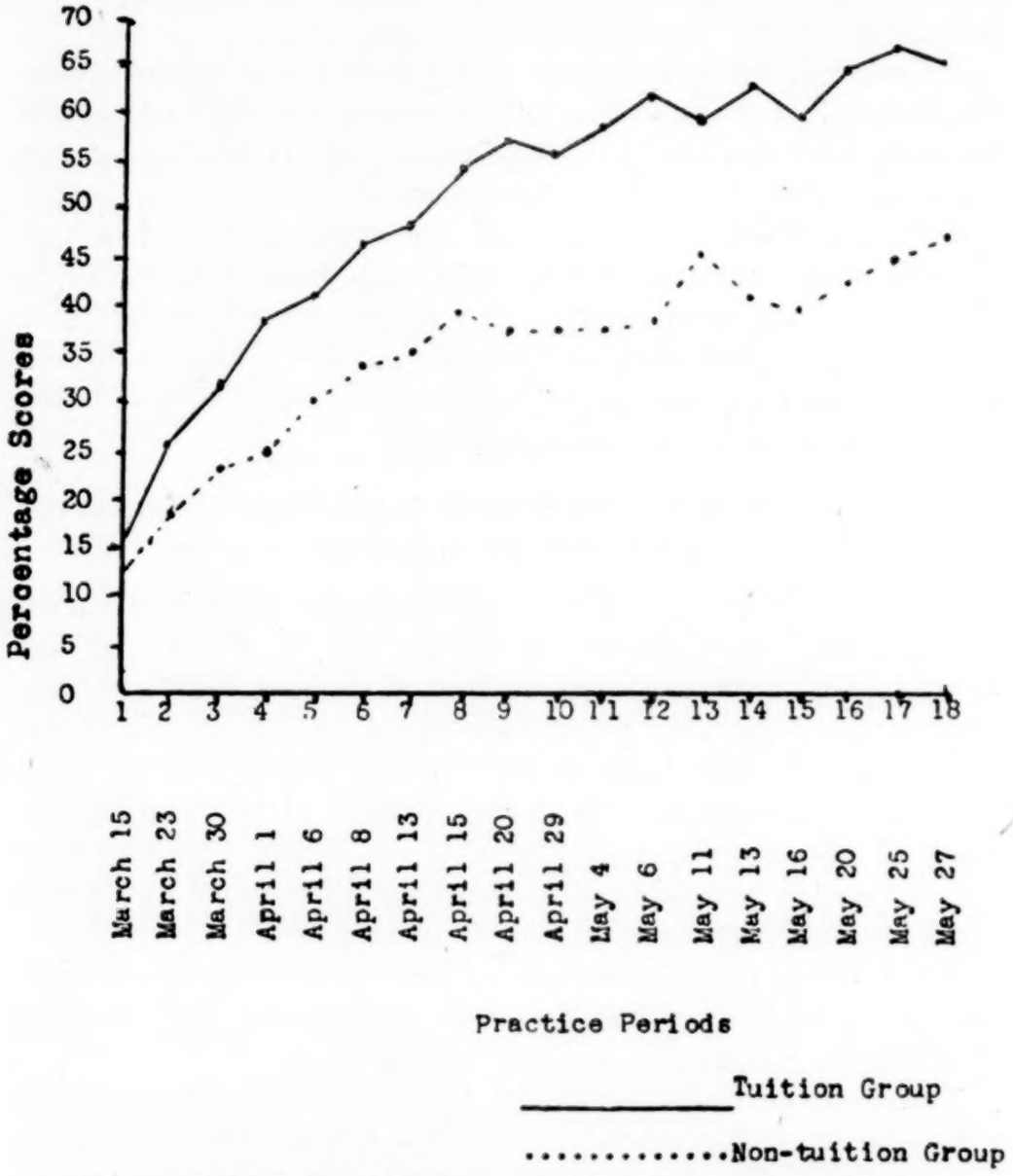

FIG. 1.—Daily average percentage scores for the two archery groups.

tuition. Whether or not this generalization is true, the curves actually plotted for the experimental and control groups are markedly similar in pattern.

Irregularities in the Learning Curves.—Group curves, constructed by averaging individual learning scores, usually have the

effect of smoothing and tending to neutralize the irregularities shown in the individual curves.

Fig. 1 shows graphically that the tuition group suffered four drops in score during the total experimental period, but that in each case the loss was for one practice period only. No drop was greater than three percentage score points. Each loss was followed by a rise which brought the percentage score to a new level of accomplishment higher than any ever before reached.

Fig. 1 portrays a different picture for the non-tuition class. While this class had two drops in score, each was followed by a period of lowered performance which lasted through four practice periods.

Tuition did not prevent losses in score from occurring. Curves drawn from data gathered from subjects learning a complex motor skill were similar whether or not the subjects were given instruction in the technique of shooting a bow and arrow.

Irregularities in Individual Scores.—The individual learning curves for each member of both groups were plotted. All the curves vary one from the other. No two are alike. Marked irregularities are seen in all the individual records.

The irregularities in each individual curve were counted and added to the corresponding total for each other member of the group. The number of irregularities occurring among the tuition group members was approximately the same as the number occurring among the non-tuition group members. Instruction in archery was unable to smooth out the irregularities in the learning curves.

Effect of Tuition upon Rate of Learning and Level of Achievement. The tuition group had been given instructions in the technique of archery previous to the time of shooting their first arrows. From Fig. 1 it can be seen that the instructed subjects started at a higher level of performance than did the uninstructed ones, and maintained superiority throughout the time of this study. The tuition group progressed at a faster rate than did the non-tuition group during both the initial and latter stages of learning.

Since the purpose of any instruction is to aid the learners to acquire skill and progress as fast as possible, it was expected at the outset of the experiment that the tuition group would achieve more than the non-tuition group during the limited time of this study. The data collected corroborate the belief that a skilled

teacher can aid students to perform a motor skill during initial trials with much more success than the students could achieve by their own efforts. By instruction, the teacher can assist the student to learn faster than he would without tuition.

RELATIONSHIP BETWEEN PHYSICAL AND PERSONALITY FACTORS AND ACHIEVEMENT

Relationship between Intelligence Test Scores and Achievement.—There was a slight relationship between the mental ability test scores and the achievement of students being given systematic instruction in archery (Table 1). The brighter students in this group tended to profit more by instruction than did the duller students.

The mental ability of the uninstructed students had little influence upon their achievement. The brighter students failed to use their ability to determine ways of improving their score. Instead, like the duller ones of the same group, they hit upon and continued to use a method of shooting that gave some initial success.

Relationships of Height, Weight, and Physical Education Experience to Achievement.—Height, weight, and previous physical education experience gave some advantage to certain members of the non-tuition group (Table 1). The advantage gained was retained in some degree throughout the process of learning the skill.

Tuition, when it is provided, has more influence on success than have the above-mentioned factors, and operates to nullify any advantage accruing from size, strength, or earlier experience.

Relationships between Measured Personality Traits and Achievement.—Correlations were computed between achievement in archery and three traits of personality as measured by a personality test given to all subjects. The traits measured were those of sociability, neurotic tendency, and self-sufficiency.

In general, the correlations found tended to be small and insignificant in size, in view of their probable errors. For the uninstructed subjects, there was practically no relationship between any of the personality traits and achievement in archery (Table 2).

For the subjects given tuition in archery, there was practically no relationship between achievement and sociability, or achieve-

TABLE 1.—RELATIONSHIP BETWEEN ACHIEVEMENT IN ARCHERY AND THE MENTAL ABILITY, HEIGHT, WEIGHT, AND PREVIOUS PHYSICAL EDUCATION EXPERIENCE OF THE TWO ARCHERY GROUPS

Factor Correlated with Archery Achievement	Statistic	Tuition Group	Non-tuition Group
	ρ	.41	.15
Mental test scores	$r\rho$	.42	.15
	P.E.ρ	.13	.15
	ρ	.02	.52
Height	$r\rho$	.02	.53
	P.E.ρ	.15	.12
	ρ	.10	.38
Weight	$r\rho$	.10	.39
	P.E.ρ	.15	.13
Previous physical education	ρ	.18	.36
experience	$r\rho$	.18	.37
	P.E.ρ	.15	.13

ment and neurotic tendency. Some relationship seemed to exist between the self-sufficiency of the students in the tuition group and their achievement in archery (Table 2). The students who tended to ignore the advice of others had poorer scores, on the whole, than did the students who sought advice and encouragement from others. Students who profited most by instructions were those who did not try to depend on their unaided efforts, but sought advice from others.

ANALYSIS OF FLUCTUATIONS IN THE LEARNING CURVES OF THE TWO GROUPS

Direction of Changes in Score within Single Practice Periods.—Within any single practice period there was a general tendency for scores to rise. This was true for the scores of the subjects in both groups. In spite of the general upward trend in score, the individual students varied greatly during practice periods. Their scores in successive trials rose or fell, or first rose and then fell, or fell and then rose, or remained the same. Tuition had no noticeable effect upon lessening or controlling these fluctuations within practice periods.

Direction of Changes in Score between Practice Periods.—Most of the subjects in both groups tended to have a decrease in score from the time of the last arrows shot at one practice period to the first arrows shot at the next practice period. However, there was also inconsistency in this. None of the students invariably lost during the interval between practice periods.

TABLE 2.—RELATIONSHIP BETWEEN ACHIEVEMENT IN ARCHERY AND THE SOCIABILITY, NEUROTIC TENDENCY, AND SELF-SUFFICIENCY OF THE TWO ARCHERY GROUPS

Factor Correlated with Archery Achievement	Statistic	Tuition Group	Non-tuition Group
	ρ	.14	.20
Sociability	$r\rho$	.14	.20
	P.E.ρ	.15	.15
	ρ	.24	.01
Neurotic tendency	$r\rho$	.25	.01
	P.E.ρ	.14	.15
	ρ	−.42	.13
Self-sufficiency	$r\rho$	−.43	.13
	P.E.ρ	.13	.15

Change Occurring in Achievement Following a Week's Cessation from Practice.—During the school's spring vacation period, the students missed two regular practice periods. This longer than usual interval between practice periods seemed to have a deleterious effect upon the instructed subjects, whose group score dropped at that time. While such an extended period without practice probably had a similar effect upon the uninstructed students, it was not quite so apparent. The non-tuition group had already suffered a loss in score previous to the prolonged period without practice. Following the holiday, its average score remained at the lowered level.

Changes in Achievement under Stimulation of Competition.—Tournaments were held during this experiment in order to motivate practice. This competition seemed to act as an incentive for the instructed subjects, whose scores rose on all but the last tournament day. Competition did not seem to be equally

effective for the uninstructed group. It is probable that the students who had the assurance of correct form from the instructor could apply to good effect during competition the technique which they had mechanized. The students who were depending entirely upon their own efforts to learn the skill probably lacked assurance. This would tend to keep them from knowing and perfecting each detail of the technique, and then mechanizing it. As soon as these students were placed under a somewhat greater strain due to competition, their imperfectly organized skill broke down.

ANALYSIS OF THE PROCESS OF LEARNING AS SHOWN BY INTROSPECTIVE ACCOUNTS AND NON-QUANTITATIVE RECORDS OF BEHAVIOR

Sources of Material.—The students of the two groups wrote introspective accounts of the thoughts and ideas that went through their minds while they were shooting. They also wrote answers to set questions which were asked them. During the experiment, an observer was present in each class to record class proceedings as well as conversations between students about archery. Following each class period, the instructor wrote an account of what went on during the class, and also recorded interesting happenings. During the last few weeks of the study, each student was interviewed. During these interviews, the students were asked about their reactions to archery, and about their learning process. A compilation was made of data from all these sources.

Thoughts of the Tuition Group during Successive Practice Periods.—During the first practice period, the students in the tuition group thought about the aspects of form that had been taught and with which they were having trouble. They also considered many matters extraneous to archery; but they did little in the way of experimental problem-solving.

During the second practice period, a few of the students in this group recalled that no ideas at all went through their minds as they were shooting some of their arrows. Most of the students, at some time during the practice period, recalled the individual instruction the teacher had given them. The recollection of this instruction and a concern about aim were common to all students.

During the third and fourth practice periods, the introspective

accounts of the tuition group continued to show variety. However, each individual tended to repeat the same ideas; but these were different from those of the other members of the group. The members of this group, more and more, reported many periods during which their minds seemed to be blank while they were shooting.

Throughout the entire experiment, the tuition group members wanted to have their faults corrected. Following this correction, they were able to work on the skill piecemeal without falling into other errors. However, concentration upon a part of the technique, as well as concentration upon correctng an error, hindered the performance of most of the students. This group found that individual instruction was more helpful than group instruction.

Thoughts of the Non-tuition Group during Successive Practice Periods.—The members of the non-tuition group, on the first practice day, thought mostly about where they should aim to hit the target. They were also concerned about the different techniques with which they were experimenting.

During the second, third, and fourth practice periods, the group members became more concerned with the form of archery than they had been on the first day of practice.

The non-tuition group members concentrated mostly on aim throughout the entire experiment. They thought only about form when they were not being as successful as they thought they should be, and their concentration upon aim had not helped them. The students did not seem to realize the necessity for perfecting the parts of the technique in order to raise their scores. Therefore, they concentrated on aim, and tried to make this compensate for the deficiency in technique that they failed to recognize.

Discontinuance of Introspective Accounts.—The introspective accounts for both groups were discontinued after the tenth practice period. At that time, the students said that their reports were becoming mere reiterations of what they had previously said.

Techniques of the Learners during Various Practice Periods.—By the fourth practice period, the students in both groups had attained an approximation of their final form in archery. The members of one group had achieved this form in a different way from that of the other group.

The tuition group was much more flexible in acquiring form than was the other group. The tuition group members allowed themselves to be changed by the suggestions of the instructor; and, although this change might bring about a temporary loss in score, they were willing to attempt it. The students asked the instructor the reasons for their misses, and depended upon her suggestions for correcting their errors.

The members of the non-tuition group were much less flexible than the tuition group while they were learning archery. The non-tuition students acquired a fairly successful technique of shooting. They kept this technique and were unwilling to experiment with another form that might improve their scores in time, but that temporarily would cause loss in score. The members of this group concentrated upon their aim rather than upon consistency of form. The advancement of this group was quite independent of the instructor.

Reasons Given by Learners for Their Fluctuations in Performance. Most of the students gave more than one reason for their losses in score. The members of the tuition group thought that attention to detail and correction of an error caused more drops in score than any other single item. Very few of the students in the non-tuition group listed this as one of the causes for their losses in score.

Members of both groups listed as one of the main reasons for losses in score the feeling of tension coming from trying too hard. Other explanations for score losses given frequently by subjects were: feeling bad physically, being depressed mentally, failing to pay attention, and lack of effort.

IMPLICATIONS OF THE STUDY

Psychological and Educational Implications.—Following is a brief series of statements, based upon this investigation, that suggest possible broad applications for the psychology and teaching of motor skill.

1) Teachers cannot smooth out the irregularities in learning curves. The forward movement of learning is by its very nature tentative and uncertain. Improvement and loss are intermingled in learning, by the very nature of the process, but with improvement outweighing loss.

2) Teaching a skill negates the advantages which some learners

derive from their physique, but takes advantage of the superior capacity for intellectual analysis and insight of brighter learners.

3) Teaching, at least through the period of instruction represented in this study, results in increased flexibility of behavior. Apparently, it takes teaching to prevent the learner from early falling into a set pattern, far below his potentialities, yet bringing some measure of success.

4) In at least three ways, the teacher aids the learner to vary his behavior.

(a) He directs the learner's attention to more adequate techniques than those that the learner has been employing. He thus stimulates the learner to break up faulty techniques, even at the temporary loss of achievement. In teaching a complex skill, this process is repeated again and again.

(b) The teacher promotes the growth of intellectual insight on the part of the learner into the factors related to his success. The instructions given by the teacher make a major contribution to the improvement of the learner's conception of the skill that he is attempting to master.

(c) Finally, the teacher's attitudes and encouragement serve to give the learner a feeling of security and confidence in giving up a familiar mode of behavior and seeking one that is better.

Limitations and Applications of the Study.—This study is limited in its specific findings to the single motor skill, archery, taught or learned under the conditions of this investigation. The extent to which results apply to other fields of skill and conditions of learning is, of course, unknown. Further research is needed to determine the broader applications of the findings of this study. In additon to archery, such sports as golf, bowling, riflery, swimming, and various field events, industrial psychology, military psychology, and doubtless many other fields might profit by research of the type exemplified in this investigation.

BIBLIOGRAPHY

Carr, Harvey. "Teaching and Learning," *Journal of Genetic Psychology*, XXXVII (June, 1930), 189–219.

Cozens, Frederick W. "The Determination of the Efficiency of Group Learning under Different Incentive Conditions and Modes of Activity," *American Physical Education Association Research Quarterly*, IV (May, 1936), 50–62.

Craft, Dave, and Craft, Cia. *The Teaching of Archery.* New York A. S. Barnes and Co., 1936, pp. v + 82.

Goodenough, F. L. and Brian, C. R. "Certain Factors Underlying the Acquisition of Motor Skill by Pre-School Children," *Journal of Experimental Psychology*, XII (April, 1929), 127–55.

Hicks, James Allen. *The Acquisition of Motor Skill in Young Children: An Experimental Study of the Effects of Practice in Throwing at a Moving Target.* University of Iowa Studies: Studies in Child Welfare, Vol. IV. No. 4. Iowa City, Iowa: The University of Iowa, 1931, pp. 80.

Hyde, Edith. "The Measurement of Achievement in Archery," *Journal of Educational Research*, XXVII (May, 1934), 672–86.

Lashley, K. S. "The Acquisition of Skill in Archery," *Carnegie Institute, Department of Marine Biology Papers.* Vol. VII. Washington, D. C.: Carnegie Institute of Washington, 1915, pp. 105–28.

McGeoch, John A. *Psychology of Human Learning.* New York: Longmans, Green and Co., 1942, pp. v + 633.

Woodworth, Robert S. *Experimental Psychology.* New York: Henry Holt and Co., 1938, pp. iii + 889.

Individual Sports Guide, published by the National Section of Women's Athletics of the American Association for Health, Physical Education, and Recreation. New York: A. S. Barnes Co., 1942–43, pp. vii + 127.

The Psychology of Learning. Forty-First Yearbook of the National Society for the Study of Education, Part II. Bloomington, Illinois: Public School Publishing Co., 1942, pp. ii + 502.

A DIAGNOSTIC LIST OF SPELLING WORDS FOR COLLEGE FRESHMEN

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Many different forms of spelling tests have been employed to determine the ability of students to spell. Some of these tests emphasize word recognition, some emphasis word recall, whereas others emphasize not only these abilities but also the ability to read and write words from their outlines when their 'hard spots' are omitted.

The list, or dictational test, which requires the students to write the words from hearing them pronounced, places the chief emphasis on the recall of word sounds. The proof-reading test and also the multiple-choice word test, on the other hand, place the emphasis on word recognition. The completion spelling test also emphasizes recognition, but, in addition, it gives more consideration to the handwriting function than other methods ordinarily do. Unless the student's spelling can be read with ease, his spelling ability, regardless of how perfect it is, will serve no useful purpose.*

A number of studies[9,10] show that the difficulty which many students have in spelling words correctly is definitely related to the type of test employed. For instance, the multiple-choice word test is much easier than the conventional list test and other forms of spelling tests in which the words are presented orally. The results of these studies, along with other studies,[2,3,5,7,8,11,12,13] are suggestive of the needed research on the problem of developing spelling tests which reveal the difficulty of words in functional situations

A diagnostic list of spelling words should test the student's ability to write them legibly as integral units or to complete them by filling in those parts which are responsible for most of the errors in spelling. In other words, more emphasis should be

* Pressey, S. L., and Pressey, L. C.—"The Analysis of Three Thousand Illegibilities in Handwriting of Children and Adults," *Educational Research Bulletin*, Vol. 6, 1927, pp. 270–273. Ohio State University, Columbus, Ohio.

See also Newland, R. E.—"A Study of the Specific Illegibilities Found in the Writing of Arabic Numerals," *Journal of Educational Research*, Vol. 21, March, 1930, pp. 177–185.

given to the handwriting function in spelling, particularly in learning the 'hard spots' of words.*

THE PURPOSE OF THIS STUDY

There is not a satisfactory list of spelling words available for conducting an effective program of remedial spelling work with college freshmen. It is apparent, therefore, that the need for such a list of words is very urgent if remedial work is to be adequately done above the secondary-school level.

Any list of spelling words which might conceivably be used in a remedial program at the college level should contain not only words which are frequently misspelled by college freshmen, but also all crucial words used by them. That is to say, if a word is used, regardless of its frequency in writing, it must be spelled correctly. The list must also be quite extensive. That is, it should include a sufficient number of useful words to give a representative sampling of a much larger list of words which college freshmen misspell.

Such a list of diagnostic spelling words was obtained by a careful tabulation of those words which were used and misspelled by students in their written work over a period of years at Carnegie Institute of Technology. These words were compiled experimentally and analyzed experimentally for their usefulness in a remedial spelling program.

Another aspect of the study was the attempt to determine the usefulness of a word-outline test in which the blanks represent the 'hard spots' to be filled in by the students.

A PRELIMINARY EXPERIMENTAL ANALYSIS OF TWO HUNDRED WORDS

The original list of words of this study was in excess of three hundred. These words were collected by the students who reported to the Reading Laboratory over a period of five years.

* Tireman L. S.,[12] (p. 13) regards a 'hard spot' as any part of a word which is misspelled by forty per cent or more of those who misspell the word. However, most investigators regard a 'hard spot' as a place in a word which is misspelled by fifty per cent of those who misspell the word.

Alper, Thelma G.[1] (p. 278) states that ninety per cent of the fifty words of the Wellesley Spelling Scale had one 'hard spot,' whereas only six per cent had two 'hard spots.'

The words were those which they misspelled in their written work during their freshman year in college. Some of the words which the students misspelled were technical and some were scientific words. These obviously could not be included in a list of words of a general nature. Consequently, out of the original list of words, two hundred forty-three were selected because they belonged in the category of words of a general nature. But many of these words were so infrequently used in writing by the students that some of them had to be excluded. Finally, two hundred words were selected from the list and carefully checked for the nature of the misspellings, or 'hard spots.' These words were then compiled in mimeograph form with blanks inserted where the 'hard spots' were known to be.*

The two hundred words in outline form were given to four small groups of men and women students of the freshman class. There were thirty-four women and thirty men who completed the word outlines. Two weeks later these very same students wrote the words from dictation.

In checking the results of the outline method of presenting the words, it was found necessary to eliminate twelve words because several of them could be spelled correctly two ways and several others were not properly controlled by their outlines. That left one hundred eighty-eight words which were analyzed for their spelling difficulties. When the analysis was completed, it was found that seventy-seven words had been misspelled by twenty per cent or more of the students who completed the words in their outline form and also wrote them from dictation. Since, however, two words (villain and captain) in the list were so infrequently used in the students' written work outside of their English themes, these were also eliminated.† That left seventy-five words which comprised the final list.

These seventy-five words are here presented in outline form, the 'hard spots' being omitted as indicated by the blanks. The figures after the H's indicate the approximate thousands in the Horn Writing Vocabulary, and the asterisks after the H's indicate the derived forms of the words in the Horn list. When a word could not be found in the Horn list of writing words, but could

* Alper, *op. cit.*, p. 278.

† There were a few other words which possibly could have been eliminated by the same reasoning, but that was not done.

be found in the Thorndike list, it is followed by the letter T and a figure, the latter indicating the particular thousand in which the word appeared in the Thorndike list. All of these words, except those preceded by asterisks, are given in the Buckingham-Dolch Word Manual in exactly the same form as they are given in the list of this study. Those preceded by asterisks are derived forms of the words in the Buckingham-Dolch list.

A DIAGNOSTIC WORD LIST*

1. question__re H5
2. permis__ble H* T18
3. temp__ment H9
4. ac__modate H3
5. occur__nce H7
6. person__l (a body of persons (H7)
7. irresist__ble H9
8. freshm__n (never adjective) H4
9. disast__ous H8
10. veng__nce H8
11. breth__n H8
12. hind__nce T9
13. ag__r__vate H7
14. etiq__te H9
15. pron__ciation H10
16. lon__iness H9
17. capit__l (a city) H3
18. auxil__ry H10
19. persever__nce H8
20. ind__spens__ble H8
21. coun__l (to advise) H5
22. breat__ (to inhale) H6
23. cemet__ry H6
24. twel__h H6
25. exag__rate H10
26. persist__nt H7
27. prophe__y (a noun) H9
28. griev__nce H9
- *29. oc__red H2
30. conscien__ous H5
31. s__rg__nt H10
32. propel__r T18
33. min__ture H9
34. hurr__dly H7
35. amat__r H7
36. ni__ty (a numeral) H4
- *37. forc__bly H7
38. maint__n__nce H6
39. exist__nce H3
40. appar__l H8
41. attend__nce H3
42. compl__ment (to complete) T7
43. chal__nge H6
44. incident__ly H4
45. rest__rant H5
46. rec__ve H1
47. superintend__nt H2
48. embar__s H9
- *49. mi__pelled T17
50. pa__time (diversion) H6
51. simil__r H1
52. dec__ve H6
53. misch__v__us H* T7
- *54. eig__hs H*
55. coun__l (meeting) H3
56. cal__nd__r H3
57. f__ry (hot) H8

* The order of rank of these words is based on the average number misspelled by the students who wrote the words from seeing their outlines and from hearing them pronounced.

58. perm__nent H2
59. dis__pline H5
60. r__dicul__s H4
61. interp__t H7
62. consist__nt H5
63. envir__ment H10
64. priv__l__ge H2
*65. prec__ding H6
66. bar__n (infertile) H10
67. station__ry (fixed) H4
68. ath__te H7
69. n__ce (a relative) H3
70. influen__al H7
71. opt__mistic H7
72. prefer__nce H4
73. arg__ment H3
74. prom__n__nt H4
75. depend__nt H6

Several words in the final list of seventy-five words were difficult for our college freshmen to spell correctly. The first one in the list was misspelled by ninety-two per cent of the sixty-four students; the second word was misspelled by eighty per cent; the third, by seventy-five per cent; and so on. The last five words in the list were misspelled by twenty per cent of the students. Although many words in this list would not rate in frequency of use much above the junior-high-school level, they were quite freely misspelled by the students of the freshman class.

Some words as 'ninety' and 'sergeant' were less frequently used in the students' written work then 'receive' and 'similar,' but when these and other crucial words are used in writing, they must be spelled correctly. That fact needs more emphasis in teaching spelling.

As regards the development of the outline form of a spelling list of words, it is important that the parts of the words which are omitted in the outlines are the ones with which the students have most trouble in spelling correctly. Otherwise, the word list does not become a useful test for diagnostic purpose, or, for that matter, for any other purpose. Furthermore, when a given word outline fails to stimulate in the mind of the student the proper word, it is not a satisfactory outline of that word. It will then have to be supplemented by a synonymous word in parenthesis following the outline of the word to be spelled.

THE TWO METHODS OF PRESENTING WORDS COMPARED

A comparison of the two ways of presenting the one hundred eighty-eight words of this study reveals that the students did much better on the dictated form of the test than on the outline form. The greatest number of words spelled correctly by a

student on the outline-word test is one hundred seventy-four, whereas the greatest number of words spelled correctly by a student on the dictational test is one hundred eighty. That is a difference of six words. The least number of words spelled correctly by a student on the outline-word test is eighty-two, whereas the least number of words spelled correctly by a student on the dictational test is eighty-nine. That is a difference of seven words. The average number of words spelled correctly by the sixty-four students on the outline-word test is 132.48, whereas the average number of words spelled correctly by these same students on the dictational test is 146.50.* That is a difference of approximately fourteen words in favor of the dictational method of presenting spelling words, without making any allowance for transfer as the result of repeating the same list of words two weeks later. Since, however, the two methods of presenting the words were quite different, the transfer effect of spelling them a second time within a two-week period is not likely to be great.

The improvement of writing the words from dictation over writing them from their outlines is doubtless due to several factors; namely, the brief interval of time between administering the list of words by the two different methods, the familiarity of the students with the dictational method of taking spelling tests, and their familiarity with the sounds of those words which were of phonetic origin.

The coefficient of correlation between the two methods of presenting the words to the students is quite marked, it being 0.90 with a probable error of 0.024. That might suggest that, if satisfactory outlines of the words which are commonly misspelled by the students are developed, the outline method of presenting words can be made a valuable silent spelling test.

COMMENTS

A diagnostic list of spelling words which is used at the college level should be selected from a wide range of the students' written work. It should comprise the crucial words as well as those having high frequency of use, since the words which are used in writing must be spelled correctly.

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* These figures represent the true means of the scores.

Since silent spelling approaches more nearly the functional situation in reading and writing than dictational spelling, or spelling from hearing the words pronounced, the outline method of presenting words, if the students' responses can be adequately controlled, will serve a useful purpose in a remedial spelling program. Obviously, some words which are misspelled can not always be successfully spelled from seeing their outlines. When, therefore, the effective spelling of a word from its outline alone is impossible, a stimulus word having synonymous meaning can be used to supplement it.

Our college freshman students do much better on writing words from dictation than they do on writing them from their outlines. That is doubtless due to the familiarity of the students with the dictational method of teaching spelling and the phonetic origin of some of the words in the list.

The correlation between the two methods of presenting words is sufficiently marked to warrant the greater use of the outline spelling test in diagnosing spelling difficulties at the upper levels of our schools.

REFERENCES

1) Alper, Thelma G.: "A Diagnostic Spelling Scale for the College Level; Its Construction and Use," *Journal of Educational Psychology*, Vol. 33, 1942, pp. 273–290.

2) Brody, David S.: "A Comparative Study of Different Forms of Spelling Tests," *Journal of Educational Psychology*, Vol. 35, 1944, pp. 129–144.

3) Gates, A. I.: *A List of Spelling Difficulties in* 3876 *Words*, Teachers College, Columbia University, 1937.

4) Gilbert, L. C.: "A Study of the Effect of Reading on Spelling," *Journal of Educational Research*, Vol. 29, 1935, pp. 570–576.

5) Horn, E.: "A Source of Confusion in Spelling," *Journal of Educational Research*, Vol. 19, 1929, pp. 47–55.

6) McKee, J. H., and Conklin, R. J.: "College Spelling—Can It Be Improved?" *English Journal*, College Edition, Vol. 17, 1928, pp. 43–49.

7) Mendenhall, J. E.: *An Analysis of Spelling Errors*, Teachers College, Columbia University, 1930.

8) Mendenhall, J. E.: "The Characteristics of Spelling Errors," *Journal of Educational Psychology*, Vol. 21, 1930, pp. 648–656.

9) Moore, J. E.: "A Comparison of Four Types of Spelling Tests for Diagnostic Purposes," *Journal of Experimental Education*, Vol. 6, 1937, pp. 24–28.

10) Northby, A. S.: "A Comparison of Five Types of Spelling Tests for Diagnostic Purposes," *Journal of Educational Research* Vol. 29, 1936, pp. 339–346.

11) Rogers, D.: "Teaching the Hard Spots in Words," *Chicago School Journal*, Vol. 3, 1926.

12) Tireman, L. S.: *Value of Marking Hard Spots in Spelling*, University of Iowa Studies in Education, Vol. 5, No. 4, 1930, pp. 5–48.

13) Weller, L, and Broom, M. E.: "A Study of the Validation of Six Types of Spelling Tests," *School and Society*, Vol. 40, 1934, pp. 103–104.

BOOK REVIEWS

W. H. LANCELOT. *Permanent Learning: A Study in Educational Techniques.* New York: John Wiley & Sons, Inc., 1944, pp. 221.

Permanent Learning: A Study in Educational Techniques is a book based on a previous manuscript, *Handbook of Teaching Skills*, written by the same author. This book, according to its purpose, "is designed to produce teachers who are concerned with making knowledge function in the lives of their pupils—teachers whose eyes are fixed upon knowledge in action, which is life."

W. H. Lancelot, Professor of Vocational Education, Iowa State College, develops the thesis in his book that a teacher is a human engineer and that his most important responsibility is to bring growth through knowledge. In developing the question of what knowledge, the point is made that it is the responsibility of the teacher to select the knowledge to be taught, and this knowledge must be the essential knowledge of the human race. This essential knowledge is determined by the teacher on the dual basis of its being, on the one hand, composed of general truths (not particular facts or details) and, on the other, those general truths which make a direct contribution to the seven cardinal aims of secondary education.

Since essential knowledge is a means and not an end, Lancelot raises the question, "What are the ends which lie beyond knowledge?" The most valuable and important ends are, according to Lancelot, interests, ideals and purposes, understandings, abilities, skills, and habits, and emotional responses and attitudes. It is the function of education to use knowledge to achieve these ends, and as such should be the teaching objectives of the teacher.

Chapters entitled "Developing Lasting Interests in High-school Pupils," "Leading Pupils to Adopt Ideals," "Securing Clear Understandings," and "Abilities Which Pupils Should Acquire" develop further the general thesis suggested above, and present specific techniques for the teacher to use in achieving the ends identified.

The next section of the book devotes itself to separate chapters dealing with the five abilities defined in the last chapter mentioned above. These abilities are the ability to think well, ability

to reason exactly, ability to make judgments, ability to do creative thinking, and the ability to do manipulative work. Each ability is discussed at length, and suggestions are made as to how they should be taught. The common errors usually made in teaching these abilities are indicated.

The last few chapters of the book are spent in developing suggestions as to the nature of problems the teacher should use in teaching his subject and of ways to plan and lead the class discussion. A separate chapter is devoted to the art of questioning.

The last section of the book, headed by the general title "Techniques Useful in Instruction," and conveniently marked by a thumb tab, reviews, in outline form, the major suggestions of the book as to the techniques developed in each chapter. Other additional techniques are developed here on such topics as preparing objectives for a given course, improving one's own thinking ability, improving one's own personality, gaining the respect and confidence of high-school pupils, gaining the good will of high-school pupils, and attaining leadership of high-school pupils. These techniques are added as being pertinent to the general theme of the book.

In reviewing a book on educational techniques, it is difficult to be fair to the author either in trying to present a balanced conception of his overall point of view or in dealing with particular elements of his presentation. When dealing with the general point of view, the conceptual frame of reference of the reviewer is continually pointing out omissions, different patterns of emphasis, and divergent steps of development. When dealing with particulars, specifics removed from their context often become ridiculous.

In general, the reviewer praises the effort of the author to help prospective and experienced teachers gain a broader conception of teaching. The concept of the teacher as being more than just a purveyor of facts and details is worthy of being repeated again and again. The emphasis upon objectives as a means of giving teachers vision and as a means of selection of content gives some hope of moving from a concept of teaching limited to the mastery of knowledge from textbooks. The general concern of the author about knowledge as a means to an end and the importance of problems and teacher-pupil planning as a way of insuring the acceptance of the end, the use of critical thinking,

and the assumption of responsibility for the student to do his own thinking is worthy of general recognition.

There are, however, a number of criticisms which might be made of the book. In the obvious attempt to simplify and give concrete principles and techniques for achieving the goals sought by good teachers, the impression might be given to the unsophisticated reader that the particular patterns of technique suggested by the author are foolproof and should be followed without much question. Further, the emphasis on knowledge, ends, and techniques throughout the book has tended to obscure the importance of the youth who is being educated. Much has been learned about human development in the past decade, and the generalizations derived from this area of study might form a desirable addition to the content of the book. Thus the dualism of knowledge and ends would become the trilogy of knowledge, ends, and youth.

The general objection to techniques listed in order of recommended use might be illustrated by using the suggestions given for arousing and holding classroom interest. (pp. 41–42)

1) Begin each day's discussion by connecting the new work quickly and clearly with what has gone before. This is not best accomplished by mere repetition of what was said or done at the previous class meeting.

2) Be interested. Call upon interested pupils early in the discussion.

3) Keep pupils thinking. Maintain suspense as to the conclusions until all relevant facts have been considered.

4) Keep pupils conscious of the future usefulness and value to themselves and to others of the work which they are doing by (a) using problems of the precise kinds that they will meet in later life, (b) encouraging them to discover for themselves the uses that they will probably have for it in the future, or (c) pointing out to them its future value.

5) Take advantage of every opportunity:
   (a) To appeal to or involve the natural impulses during the discussion.
   (b) To connect the thought with interesting things which the pupils have already studied; with interesting things lying ahead; with ideals or purposes which they are endeavoring to attain; with interesting persons or events, or with interesting applications or phenomena outside of school.
   (c) To strengthen their sense of progress toward their chosen goals.
   (d) To introduce humor.

Then the author continues:

> As will have been noted, this technique provides an easily followed order for the application of most of the principles governing interest. In the early part of any discussion or recitation, the teacher's attention should be directed chiefly to accomplishment of the first four steps of the technique. Then during the remainder of the discussion it should be fixed mainly upon the four ends named in the fifth step.

The reviewer merely needs to wonder if humor is pertinent only to the last part of each discussion or recitation.

A third objection may be raised over the apparent distinction made between ability to think well, to do exact reasoning, to make good judgments, and to do creative thinking. The reader is somewhat confused by the implication that all of these abilities are discrete, that they may be polished by a separate set of techniques, and that they include all the important abilities of an educational program. The reviewer believes that a critical examination of the above abilities will not lend support to their discreteness and, in addition, will reveal a distinct sameness in the techniques given for their development. Also, many secondary schools concerned about important abilities to be developed through an educational experience have added the abilities involved in social living and in adequate communication to those involved in critical thinking.

While the reviewer recognizes the difficulties of a single book accomplishing or even recognizing many of the important elements of a teacher-training program, the present book generally ignores two major questions. It is difficult for any teacher, especially if he is directing the educational experiences of youth so as to achieve particular objectives, to ignore the two related questions of: (1) What are the centers around which these experiences can best be organized so as to achieve these ends? (2) How is it possible to evaluate these experiences in order to determine whether the ends have actually been achieved? From the point of view of the stated purposes of the book, this is perhaps the most serious lack of the presentation.

Further critical examination will reveal some 'straw men' created for the purpose of clarifying the author's contribution such as "modern methods make for poor understanding." Others may criticize the book from the standpoint of presenting

only a very narrow point of view of curriculum and instructional practice to students preparing to be teachers. These objections, however, may not be pertinent, because of the specific character of the book.

It is the feeling of the reviewer, therefore, that *Permanent Learning* is a valuable book for inclusion in the bibliography of a teacher-training program. It should prove exceedingly helpful to many prospective as well as experienced teachers in aiding them to clarify their thinking about many important issues of good teaching. On the other hand, it is not adequate to serve as a basic text. This, however, was probably never the intention of the author.

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D. B. KLEIN. *Mental Hygiene.* New York: Henry Holt and Company, 1944, pp. 498.

Mental hygiene is more than a field of knowledge. Writing a book on mental hygiene calls for a breadth of knowledge, for a degree of practical experience and clinical experience, and for an ability to integrate contributions to method as well as knowledge, more so than do most other fields. It not only calls for a good perspective, an adequate comprehensive knowledge, but a sympathy for humanity as well as a desire for understanding and a feeling for understanding, which the writing of other books does not call for.

In his book, *Mental Hygiene*, Klein, aware of this complexity, attempts to do the sensible thing; namely, to select well, to organize well, to write well the kind of book that would be useful not only for college students but also for intelligent laymen. How satisfactorily does he do this? Let us first see what he includes in his mental hygiene journey. An inspection of his table of contents indicates that he makes two trips—one to the territory of prophylactic mental hygiene and the other to the territory of meliorative mental hygiene. "The scenery," he informs us, "will overlap, but the ports of call will be different." And they are. The book is divided into four parts, captioned "Nature and Scope," "Nature of Mental Disease," "Preventing Mental Disease," and "Promoting Mental Health." In the last portion he includes chapters on "Home and the Balanced Personality,"

"The Dynamics of Conscience," "Interest, Motivation, and Morale," "Coping with Reality," "Self-emancipation by Repression," "Mammon versus Morale," and a final chapter on "Educating for Mental Hygiene." In his introduction he advises readers who are more interested in self-help to skip the earlier chapters and go to part four directly. This includes a wide range of topics. How well does he cover them? How well does he suggest application of their knowledge for everyday use?

All in all, it can be said without any possibility of doubt that Klein shows a familiarity with the neuroses and psychoses that is quite adequate for presentation, also that he knows them well enough to be critical of concepts more often loosely used in other texts, and that he has lived long enough, observed enough, understood enough, to present the material in such a manner that understanding rather than cataloging is a promised result for the reader. In this he does an excellent job. His book as a whole is informing, intelligent, enlightening, well-arranged, and, in addition to all of that, it is written with a style that is both light and thorough. Scholastics, labels, and classifications do not bother Klein. His concern is: what is known, how well is it known, how valuable is the knowledge, and what use can be made of it for mental hygiene purposes. One could, if one wished to be critical, list a number of serious omissions—or what might be considered as such—of an over-emphasis on some phases of knowledge and of a neglect of certain others. But if the complexity and vastness of the field are considered, if the purpose of the mental hygiene book is also considered, it can be said that Klein has done an excellent job in humanizing valuable knowledge, not only for textbook purposes, but also for general purposes.

Klein does not hesitate to use homely illustrations and popularized ways of expressing himself in lieu of the more professionally approved manner, and this with an increase of possible understanding. In his general write-up he shows himself familiar not only with mental hygiene literature, but with the type of literature we think of as being a part of the mental equipment of any well-educated, cultured man raised in the United States. Walt Whitman, William James, and Zinsser are, strictly speaking, not mental hygienists but have made contributions which can be made use of by the mental hygienists; and Klein does not hesitate to make use of them, and does it well. In the book as a

whole the author shows an ability skillfully to integrate laboratory experimental fields of knowledge with practical needs. He makes intelligent, selective use of both laboratory contributions and clinical experience.

In this book, then, Klein has succeeded in doing what he purposed to do—write a book that has enough content in it so that it can be used as an orientation course for beginning students in psychiatry and clinical psychology, and to serve also well-read, intelligent individuals searching for information of this kind. It is a book deserving of consideration as a text in mental hygiene; but it is better than that—it is a book worth reading by people interested in the clinical field as well as for social psychologists.

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BHOLA D. PANTH. *Consider the Calendar.* New York: Bureau of Publications, Teachers College, Columbia University, 1944, pp. 138.

The purpose of this treatise is to present the historical perspective, the pertinent facts, and the two salient alternative solutions relating to the problem of changing the calender. There are three basic calendar concepts: (1) The lunar calendar in which the lunation, a period of about twenty-nine one-half days is used as a criterion, a month being measured from one new moon to another. (2) The solar calendar is based upon the earth's movement around the sun in 365.2422 days. (3) The luni-solar calendar is a compound of the previous two. The week of seven days, an unnatural unit of time reckoning, is an arbitrary device dictated by social necessity and used since antiquity. Historical examples of each type of calendar are given: (1) the Mohammedan—a lunar calendar; (2) the Egyptian—a solar calendar; and (3) the Hebrew—a luni-solar calendar. The heritage of our present Gregorian calendar springs from diverse origins—Babylonian, Jewish and Roman. The Gregorian was adopted by the church in 1582, by Britain (and colonies) in 1752, and now is almost universal in Western civilizations. Various suggestions have been made for remedying deficiencies in the Gregorian calendar. The most important are: (1) the world calendar of twelve months with four equal quarters of three months each, and (2) the international fixed calendar with thirteen equal

months. Stabilizing days are added to complete the solar year. Because the world calendar would disturb existing habits less, it has more chance of support from both the church and laymen. Nevertheless, a period of education and propaganda is needed before approval of calendar changes will be possible. This treatise is an interesting and provocative discussion of the origin and evolution of the calendar. It points up not only the need, but also the most hopeful avenues of calendar reform.

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ADOLPH A. SANDIN. *Social and Emotional Adjustments of Regularly-promoted and Non-promoted Pupils.* New York: Bureau of Publications, Teachers College, Columbia University, 1944, pp. 142.

Social cleavages and dislocations introduced by a policy of non-promotion result in undesirable attitudes, personality difficulties, and general unhappiness in the children. The claimed values for non-promotion are not substantiated by objective studies. These, in essence, represent the general findings of this study. Illustrative of specific findings concerning the differentiating characteristics of the slow-progress pupils are: they manifest less commendable behavior characteristics; more often manifest unfavorable reactions towards school and school work; are not favored by what might be, from a biological and social point of view, possible companions; are rated less favorably by their teachers on seventeen out of twenty behavior traits; and within the group boys are rated less favorably than girls. Also, it was found that their teachers did not seem to take account of the pressures and underlying causes which contributed to the misbehavior of the children. Essentially, then, the study reveals that in a non-promotion policy the subject-matter is the only consideration and that other personality dimensions are largely disregarded.

The findings are based on a comparison of two hundred twenty-seven regular-progress pupils and one hundred thirty-nine pupils who had experienced non-promotion one or more times. The children were picked from grades I to VIII in schools of Wallingford, Connecticut. Methods used for investigating the emotional and social development of the children included: (1) socio-

metric methods; (2) behavior ratings for desirable and undesirable behavior patterned after Wickman's study; and (3) the 'Who Is It Test' patterned after Character Education Inquiry studies. For exploring feelings and attitudes a relatively small number of interviews were also made. The more quantitative data were subjected to the Chi-square method of analysis.

Considering the fact that, on the average, approximately ten per cent of the pupils in the United States fail to win promotion, the problem investigated has important educational implications from the point of view of size as well as social significance. From these findings the author concludes that the burden of evidence is against the people who insist on applying a non-promotion policy and that a changed program definitely is warranted. The needed changes, the author realizes, would necessitate a more flexible curriculum and personnel than are now usually attainable.

From his sociometric findings the author comes to the conclusion that the slow-progress pupils lose out in their interpersonal relations. To what extent this effect is caused by, rather than merely associated with, other personality factors in the individuals examined could be more effectively explored by carrying out a sociometric study in a manner used by Jennings in her personality isolation study with a lapse of time in the before and after periods of the effects of the event which is being studied. From his rating and questionnaire studies the author comes to the conclusion that the slow-progress pupils manifest less desirable behavior characteristics. For studying this it would be more to the point to use tests which are more revealing of inner feelings and attitudes than the questionnaire or rating scales used; for example, projective techniques. These, however, are further suggested by the present one. The content of this study itself, however, does have enough in it to make it worth while reading for educational psychologists and educators.

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VITA STEIN SOMMERS. *The Influence of Parental Attitudes and Social Environment on the Personality Development of the Adolescent Blind.* New York: American Foundation for the Blind, Inc., 1944, pp. 124.

Blind people are individuals. Seeing people have blind spots in perceiving and understanding the blind. The feelings of insecurity and inferiority that blind adolescents have arise to a large extent from environmental conditioning rather than from the physical defect itself, and in this environmental conditioning the parent-child relationship plays a very significant rôle. The foregoing statements describe both the general findings as well as the frame of reference of this particular study on the adolescent blind. The study itself purports to be a pioneer study, "the first known attempt to investigate how the social environment, particularly parent-child relationships and parental attitudes, condition the blind child's personality and pattern of behavior." This is done by the use of the California Personality Test and the investigation of parental attitudes. Findings concerning the psychological effect on parents of blindness in children are reported, as are modes of parental adjustment and mechanisms of adjustment utilized by blind children.

Materials used in this research project were obtained through the use of the California Personality Test, questionnaires, and some case studies. Individuals selected for this investigation were either totally blind or practically blind. Only subjects with seeing siblings were selected. Both sexes were represented at age levels ranging from fourteen to twenty-one, and grade levels from VIII to XII. The intelligence range was from low average to very superior.

On the basis of these studies, the modes of parental adjustment discovered in the parents of blind children are classified under five captions: (1) acceptance of the child and his handicap; (2) denial reaction; (3) over-protectiveness; (4) disguised rejection; and (5) overt rejection. Mechanisms of adjustment utilized by blind children are also classified into five categories: (1) compensatory reaction; (2) denial reactions; (3) defense reactions—rationalization, projection; (4) withdrawal reaction; and (5) non-adjustive behavior. It is interesting that ambivalent and inconsistent reactions, which one would expect to find in both parents and children and which, as a matter of fact, appear in some of the case studies, are not reported. Which is to say that the use of an inventory test kept the investigator familiar with the problem from releasing intelligence for achieving insights concerning motivational problems on the part of the children as well as the

parents. It is surprising and disappointing to find that the investigator's emphasis on the difficulty of seeing people, even trained ones, in understanding the ways of perceiving and feeling by blind adolescents did not move him to use unstructured materials rather than an inventory of the California Personality Test variety for exploring personality and a free association method rather than a questionnaire for investigating parental attitudes. However, considering the limitations of the methods used, the whole study does give a body of more specific knowledge than previously available about blind adolescents, and should serve as a useful contribution, not only for yielding knowledge not formerly available, but also to serve as a basis for further research.

This volume also includes an appendix in which are recorded the evaluation scales used; samples of letters to schools for the blind, staff members, blind students, and parents; child-questionnaires and parent-questionnaires used; as well as a bibliography.

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